GRANT APPLICATION MANUAL

PIER ENVIRONMENTAL AREA EXPLORATORY GRANT PROGRAM

January 2003

PUBLIC INTEREST ENERGY RESEARCH

"Research Powers the Future"

PIER[1] ENVIRONMENTAL AREA
EXPLORATORY GRANT SOLICITATION

DEADLINE FOR RECEIPT OF APPLICATIONS: 5:00 PM PST, 1 MARCH 2003

The California Energy Commission's (Commission) PIER Environmental Area (PIEREA) Team is requesting proposals for research projects through its Exploratory Grant Program. This program is administered through the University of California. The goal of this program is to support the early development of promising, new scientific concepts that have the potential to impact the way we understand and/or address energy-related environmental issues. The program should enhance the current PIEREA research portfolio by funding focused projects in areas that are not presently being considered. Approximately $675,000 of PIER funds is allocated to PIEREA Exploratory grants. The maximum amount of any individual grant award will be $75,000, including required research facilities and technical expertise assistance. The Exploratory Grant Program is designed to tap into the broad research community to help ensure that PIEREA is open to research opportunities in the full range of energy-related environmental issues relevant to the mission of the PIEREA Program.

The PIER program is made up of six subject areas: Buildings End-Use Efficiency, Industrial/Agricultural/Water End-Use Energy Efficiency, Renewable Energy, Environmentally-Preferred Advanced Generation, Energy Systems Integration, and Energy-Related Environmental Research. The mission of the PIER Program is to conduct energy research to improve quality of life by "…providing environmentally sound, safe, reliable and affordable energy services and products…"

The mission of the PIEREA program is to develop cost-effective approaches to evaluating and resolving environmental effects of energy production, delivery, and use in California, and to explore how new electricity applications and products can solve environmental problems. The primary objective of this program is to fund projects that will provide foundational information necessary for more-focused, larger-scale RD&D projects that support the PIEREA mission. The Exploratory Program will assist Energy Commission staff in fulfilling this mission by providing information:

- that supports the early development of promising, new scientific concepts;
- that can be used to determine the need for new PIEREA planning efforts (roadmaps);
- that leads to an improved understanding of key processes that affect environmental quality as a result of electricity generation, transmission, distribution and use in California; and
- that is necessary for more informed decision and policy making in California.

Grant awards will be made competitively on the basis of a technical and programmatic review process.

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[1] The Public Interest Energy Research (PIER) Program is managed by the California Energy Commission. The purpose of the program is to provide benefits to California electric ratepayers by funding energy research, development and demonstration (RD&D) projects that are not adequately provided for by competitive and regulated energy markets. More information about the PIER Program can be found at www.energy.ca.gov/pier/energy/index.html.

The research goals conducted in the PIEREA Program are crosscutting. They are to:

- Improve understanding and develop solutions to reduce the air quality, land-use and habitat, and aquatic resources-related impacts of electricity generation, distribution and use;
- Improve understanding of the nature and significance of global climate change, its relationship to electricity generation and use, and develop strategies and solutions to address identified impacts; and
- Create the knowledge base for a policy framework that encourages solutions to environmental issues through electricity technology development and market innovation.

Within PIEREA, there are five focus areas: (1) Indoor air quality; (2) Outdoor air quality; (3) Land use and habitat; (4) Aquatic resources; and (5) Global climate change. Research Plans (roadmaps) are being developed in each of these PIEREA focus areas. For those areas that have finalized roadmaps, there are certain roadmap research restrictions that apply to the Exploratory Grant Program. These restrictions apply in order to prevent the same proposal from being submitted to multiple programs within PIER, to avoid institutional confusion over which PIER program the applicant is soliciting, and to avoid the duplication of research. See section titled ***"What projects are not eligible for funding?"*** for specific instructions on roadmap and other research restrictions.

A detailed description of the PIEREA program and focus areas (except for indoor air quality) can be found on the Commission web site at www.energy.ca.gov/pier/energy/index.html. The PIEREA Indoor Air Quality area is currently under development. The California Energy Commission's PIER Buildings End-Use Efficiency Team has recently co-sponsored a national planning effort to identify research and development (R&D) needs in the area of indoor environmental quality (IEQ). This plan is available to download as an Adobe Acrobat PDF file on the Commission's website. The PIEREA team is working with the Buildings' team to address particular aspects of the plan. Just as with the roadmaps, certain restrictions regarding the IEQ research plan will apply to the Exploratory Grant Program.

Participation in the PIEREA Exploratory Grant program is open to individuals and the following groups: small and large businesses, non-profit organizations, academic institutions, and local, state and federal governmental organizations. To encourage participation in the program, the process for soliciting, evaluating and awarding grants has been simplified and streamlined.

Persons interested in applying for a PIEREA Exploratory Grant should consult the material in this Grant Application Manual. The Grant Application Manual contains important details on the preparation and submission of proposals, including instructions that must be followed, forms that must be used, and research restrictions.

DEADLINE FOR RECEIPT OF APPLICATIONS:

5:00 PM PST, 1 March 2003

Submit completed grant applications to appropriate address below.

Address for electronic submission (PREFERRED):

Email: Explore@energy.state.ca.us

PIEREA Exploratory Grant Program Administrator
California Institute for Energy Efficiency
University of California, Office of the President
1333 Broadway, Suite 240
Oakland, CA 94612-1918

Contact Information

Phone: (510) 287-3322
Fax: (510) 287-3328
Email: Explore@energy.state.ca.us

Note: Proposals sent to the California Energy Commission will not be accepted.

Applicant Notification List

We recommend that all individuals or organizations that intend to submit a proposal to the current solicitation register their email address with the PIEREA Exploratory Grant Program Administrator in order to receive notification of any late changes to the application process. To register, send an email to Explore@energy.state.ca.us and request your email address be added to the "Applicant Notification List". Contact information will only be retained for the current solicitation and must be renewed for each solicitation to which you intend to apply.

PIEREA Exploratory Grant Solicitation Notification

Individuals and organizations that desire to receive an email notification of future PIEREA Exploratory Grant solicitations or all Energy Commission funding solicitations should go to the California Energy Commission's web site at www.energy.ca.gov/contracts and go to the page describing the various Mailing Lists. Follow the instructions for registering your email address with Research and Development Lists.

PIEREA Exploratory Grant Program Administrator staff welcome your comments and suggestions for improving this manual at any time. Please contact us if you have any questions or comments about these materials.

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LIST OF ATTACHMENTS

OVERVIEW OF THE GRANT APPLICATION MANUAL

This manual provides the information needed to establish applicant eligibility and to complete the application package. In addition, this manual describes key program features related to: 1) Commonly asked questions about the PIER Environmental Area (PIEREA) Exploratory Grant Program, 2) Additional information regarding program features and requirements, 3) Grant application instructions, and the 4) Grant award agreement.

This manual may be revised periodically to address changes to the grant application process. Applicants must use the current version of the Grant Application Manual that is posted along with the solicitation on the California Energy Commission's web site at www.energy.ca.gov/contracts where it is available for viewing and downloading in both PDF and Microsoft Word 97/98 format. A paper copy of this manual is available from the PIEREA Exploratory Grant Program Administrator upon request (see page iii for contact information).

Part 1 answers commonly asked questions about the program; Part 2 contains additional information regarding program features and requirements; Part 3 includes the application forms and instructions for applying for grant funding; and Part 4 contains information pertinent to the Grant Agreement.

Part 1. COMMONLY ASKED QUESTIONS ABOUT THE PIEREA EXPLORATORY GRANT PROGRAM

Who can apply for grants?

Participation in the PIEREA Exploratory Grant program is open to the following groups:

1. **Individuals:** Must be acting independently. If employed or affiliated with an organization, applicant must have authorization from the organization to pursue project development exclusively as an individual with no rights reserved to the organization. The individual, not the organization, retains all intellectual property rights accrued from the grant project. NOTE: Applicants who are employed by a college/university or affiliated laboratory are not eligible to apply as individuals; submissions ***must*** be made through the applicant's home institution.
2. **Small and large businesses:** The PIEREA Exploratory Grant Program uses the Federal definition of small as specified in Title 13, Code of Federal Regulations, Part 121 (13 CFR § 121), Small Business Size Regulations (www.sba.gov/regulations/siccodes/). Size requirement varies based on type of business with the average requirement being either prior year gross receipts of less than $5 million or total employees not exceeding 500.
3. **Non-profit organizations:** Possess IRS tax exemption.
4. **Academic institutions:** Public or private post-secondary institutions.
5. **Local, State and Federal governmental organizations**: Local, State and Federal governmental agencies, federal laboratories or other Federally Funded Research and Development Centers who are not otherwise prohibited from directly responding to a public RFP.

How much funding is available for each grant and the program?

The maximum amount of any individual grant award will be $75,000. Approximately $675,000 of PIER funds will be allocated to PIEREA Exploratory grants.

Are matching funds, royalty payments, or grant repayments required?

No. There are no matching fund requirements associated with the PIEREA Exploratory Grant Program. However, cost sharing is encouraged. Royalty payments or grant repayments are not required.

What projects are eligible for funding?

Proposals must meet **all** of the following criteria to be eligible for consideration under the Grant Program:

1. Proposal was received on time.
2. Proposal is not marked proprietary in its entirety.

3. Proposal is submitted by an eligible applicant.
4. Application does not contain more than one proposal.
5. Proposal does not contain more than one project.
6. Proposal is **not** greater than $75,000.
7. Proposed research clearly fits within PIEREA and has a clear connection with electricity generation, transmission, distribution, and/or end use.
8. Proposed research does not duplicate research, nor proposes research or activities listed as not eligible, see section below: ***What projects are not eligible for funding?***
9. Proposal is complete and does not exceed the maximum page requirement.

The following listed types of activities are examples of the sorts of research activities eligible for funding:

1. Improved analytical methods, models
2. Small-scale field demonstration
3. Collection and analysis of existing and new data
4. Literature reviews
5. Surveys or interviews with experts
6. Market or technology assessments/surveys
7. Meta-analysis studies

What projects are not eligible for funding?

The following types of research and activities are NOT eligible for PIEREA Exploratory Grant funding:

1. Development of emissions control technologies (note: emissions controls are funded in other areas of the PIER program)
2. Design of educational curricula, the training of teachers, or other traditional educational activities
3. Environmental impact assessments - as preparation of information required by environmental permit, such as the California Environmental Quality Act or the National Environmental Protection Act
4. Environmental mitigation and data collection and analysis as required by local, State, or federal governmental permit
5. Transportation-related research
6. Nuclear energy research
7. Technology feasibility studies, development, and/or commercialization

8. Marketing and promotion activities
9. Product commercialization or certifications
10. Projects that target PIEREA research objectives identified in the following areas:

Land-Use and Habitat

Restrictions from the Roadmap for PIER Research on Avian Interactions with Wind Turbines in California:

- Update Wind Turbine Effects Bibliography
- Continue Studies to Assess Turbine/Site Characteristics Associated with Fatalities
- Develop a Risk Assessment Model
- Conduct an Altamont Wind Resource Area Repowering Study
- Identify Risks of Potential Wind Resource Areas
- Conduct a Study of Habitat Manipulation Feasibility
- Conduct Video Monitoring at High-Risk Wind Turbines

Restrictions from the Roadmap for PIER Research on Avian Power Line Electrocutions in California:

- Standardize Mortality Estimation
- Electrocution Risk Assessment
- Risk Reduction Research and Development
- Develop Standardized Monitoring Protocol
- Update Avian Electrocution Document and Develop Bird Safe Electrical Line Building Codes
- Develop System-Wide Reporting Requirement
- Research and Create a Clearinghouse for Data and Information Relating to Avian Electrocution

Restrictions from the Roadmap for PIER Research on Avian Collisions with Power Lines in California:

- Standardizing Mortality Estimation
- Testing and Documentation of Diversion Device Efficacy
- Test and Document Effectiveness of Remote Collision Detection Devices
- Determine Collision Risk Levels Associated with Potential High-Avian-Use Habitats
- Determine the Factors Necessary to Develop a Reporting Requirement

Aquatic Resources

Restrictions from the Roadmap for PIER Research on Hydropower's Influence on California Water Quality:

- Improve Understanding of Aquatic Organisms' Response to Water Temperature
- Improve the Ability to Predict Water Temperature
- Improve the Ability to Predict the Effects of Sediment Transport
- Improve the Utility of Bioassessment and Indices of Biological Indexes

Restrictions from the Roadmap for PIER Research on Fish Passage at Hydropower Facilities in California:

- Develop Fish Passage Information Needs.
- Predictive and Descriptive Models for Fish Passage in California
- Fish Passage for Riverine Species
- Determine the need for guidance and collection facilities to efficiently and safely expedite fish passage (juvenile salmonids and others) through large stratified reservoirs
- Conduct a study to validate and demonstrate low- to no-maintenance fish screens that effectively exclude fish during power operation even when screens are exposed to high sediment and debris loading
- Develop Downstream Fish Passage Monitoring Guidelines

***Restrictions from the Future Roadmap: Instream Flow Determination for California Hydropower Facilities*:**

- Any research dealing with improving existing or developing new models or methodologies for determining suitable aquatic habitat or flow to sustain aquatic freshwater ecosystems

Restrictions from current projects:

INFORM:

- Research that addresses the use of global climate models for runoff prediction.
- Research that addresses the use of ensemble forecasting for runoff prediction.

PULSE FLOWS:

- Research that addresses the effect of pulsed, ramping or manufactured flows on aquatic species or habitats.

Air Quality (Indoor and Outdoor)

Restrictions from the Roadmap for PIER Research on Distributed Generation (DG):

- Air Emissions Inventory and Characterization
- Dispersion Modeling to Identify Local Impacts
- Life Cycle Assessments of DG Technologies
- Emissions Reduction Technology, Fuel Treatment, and Process Improvements
- Systems Analyses of Distributed Generation Implementation

Restrictions from the Roadmap for PIER Research on Indoor Air Quality:

- Indoor Air Quality Instrumentation
- Characterization of Ventilation and Indoor Environmental Quality (IEQ) – Small
  Commercial
- Characterization of Ventilation and IEQ – New Housing
- Comparison of Health in Schools to Ventilation Rates
- Office Equipment

Restrictions from the PIER Buildings Program research focus areas:

- Develop/Improve System Design for Heating, Cooling, and Ventilating Buildings
- Develop New Recommendations for Ventilation Rates and Improve Effectiveness of Ventilation Control Technologies
- Identify, Develop & Demonstrate Technologies & Strategies to Enhance Building System Operations
- Identify Issues & Develop Solutions for Energy-Related IEQ in California Homes
- Develop Solutions to Microbial Growth in Building Envelopes and HVAC Systems
- Develop Guidelines on IEQ Best Practices for Building Design & Operation

Global Climate Change

Research restrictions from PIEREA Climate Change Research, Demonstration, and Development Plan

Climate Change Monitoring, Analysis, and Modeling

- Compilation and Analysis of Historical Climate and Measurement of Key Variables
- Intercomparison of Regional Climate Models
- Development of Climate Scenarios for California

Impacts of Climate Change on California Water Resources

- Monitoring of Hydrologically Important Variables
- Testing the Operation of the State Water System under Plausible Climate Scenarios

Impacts of Climate Change on Ecological Resources

- Enhancement and Application of Dynamic Vegetation Models (DVMs) for California

Carbon Sequestration in Terrestrial Ecosystems and Geological Formations

- Development of Cost Estimates for Forestry and Agricultural Soil Carbon Sequestration Options in California
- Economic Studies of Bioenergy Strategies in California
- Carbon Sequestration in Geological Formations

Greenhouse Gas (GHG) Reduction Curves and Inventory Methods

- Energy Balances for California
- Research on New, Improved Methods to Estimate Non-CO_2 Emissions
- Development of Supply Curves for California

The Economics of Climate Change Mitigation and Adaptation in California

- Integrated Modeling and Impact Analysis
- Energy Efficiency and Technological Change
- Non-CO_2 GHGs and Markets for Emissions Trading

For more details see Appendix 3 (Research Restrictions).

Can I submit more than one proposal in a solicitation? Can I submit more than one project per proposal?

No. Only one proposal per principal investigator is allowed and only one project per proposal is allowed. If a Principal Investigator submits more than two proposals or more than one project per proposal, the Program Administrator will fail them in the initial screening and return the proposals to the applicant and neither proposal nor projects will be considered.

When can I apply and how are grant applications processed?

Applicants must submit proposals so that they reach the Program Administrator between the time a Solicitation Notice is posted on the program's solicitation web page and the proposal cutoff date specified in the solicitation. Applications post marked with the cutoff date will be accepted. Grant applications received by the Program Administrator before 5 PM PST on the cutoff date will proceed to initial screening as shown in Diagram 1, which depicts the selection process. Electronic submissions are preferred.

How long does it take to receive funding?

It takes approximately four to six months after the cutoff date to complete the proposal evaluation, approval and agreement execution process. Grant agreements may be in place with Awardees within four weeks of the Commission final approval of proposal funding if no unexpected delays are encountered. Research may begin as soon as the grant agreement is fully executed by the Program Administrator.

How long do I have to complete a project?

Projects need to be appropriately scoped to not exceed 12 months to be suitable for the PIEREA Exploratory Grant Program. The period of performance on a grant project cannot exceed 15 months; the additional 3 months is to include potential information transfer activities that would occur after the Final Report has been completed. All deliverables, including the Final Report, must be received during the stated term of the grant agreement.

Will I be allowed to extend my project?

Term extensions are not automatic. They require written justification and may adversely impact future follow-on funding decisions.

Whom do I contact for more information?

PIEREA Exploratory Grant Program Administrator
California Institute for Energy Efficiency
University of California, Office of the President
1333 Broadway, Suite 240
Oakland, CA 94612-1918
Phone: (510) 287-3322
Fax:(510) 287-3328
Email: Explore@energy.state.ca.us

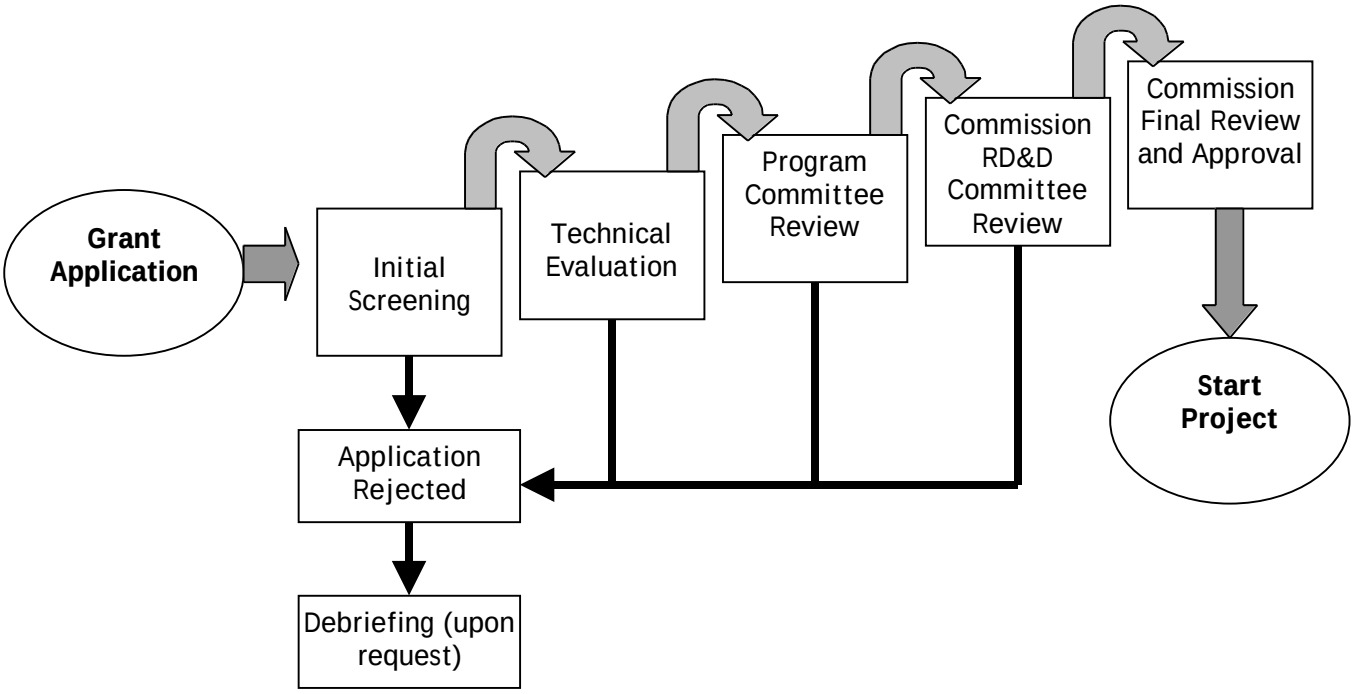
Questions addressed to the PIEREA Exploratory Grant Program Administrator that have broad applicability to applicants will be posted on the "Frequently Asked Questions" section in the California Energy Commission's web site at www.energy.ca.gov/contracts. Questions received up until one week before the application deadline will be answered. Please review the FAQ section periodically for updates.

Part 2. ADDITIONAL INFORMATION REGARDING PROGRAM FEATURES AND REQUIREMENTS

2.1. Grant Application Processing

Grant applications will be processed in the following phases (as outlined in Diagram 1):

Diagram 1: Grant Project Selection Process



2.1.1. Grant Application

Grant applications received on or before the specified cut-off date will enter the screening/evaluation process.

2.1.2. Initial Screening

The PIEREA Exploratory Grant Program Administrator will perform an administrative pass/fail review based on the criteria listed in Table 1 (Initial Screening Criteria) below; ***all criteria must be met*.**

Table 1: Initial Screening Criteria

CRITERIA	SCORE
1. Proposal was received on time	PASS/ FAIL
2. Proposal is not marked proprietary in its entirety	PASS/ FAIL
3. Proposal is submitted by an eligible applicant	PASS/ FAIL
4. Application does not contain more than one proposal	PASS/ FAIL
5. Proposal does not contain more than one project	PASS/ FAIL
6. Proposal is **not** greater than $75,000	PASS/ FAIL
7. Proposed research clearly fits within the Environmental Area of PIER and has a clear connection with electricity generation, transmission, distribution, and/or end use	PASS/ FAIL
8. Proposed research does not duplicate research, nor proposes research or activities listed as ineligible (see pages 4 to 7 and Roadmap Restrictions in Appendix 3)	PASS/ FAIL
9. Proposal is complete and does not exceed the maximum page requirement	PASS/ FAIL

Applications are placed in one of the following two categories after the initial screening:

- Satisfies all screening criteria and proceeds to Technical Review.
- Fails any of the criteria and application is rejected.

2.1.3. Technical Review (TR)

Technical reviewers may be from academia, environmental organizations, industry, or government. The applicant may recommend qualified technical reviewers that are independent from the project team and who are capable of conducting an unbiased evaluation with no conflict of interest. Recommendations are advisory in nature. The PIEREA Exploratory Grant Program Administrator is responsible for the final selection of the reviewers. The identity of the actual reviewers will be kept confidential.

Applications that pass the initial screening will be scored by a minimum of three technical reviewers with recognized expertise in the proposed subject area. Technical reviewers will score each proposal on the degree to which it meets each of the Technical Criteria summarized in Table 2, and described in detail in Appendix 1 (Technical Evaluation Criteria).

Raw Score	Proposal Response
0	Not responsive to the criterion
1-2	Response is minimal
3-4	Responds only marginally to relevant considerations under the criterion
5-6	Responds satisfactorily to most relevant considerations under the criterion
7-8	Responds satisfactorily to all relevant considerations under the criterion
9	Responds completely, accurately and convincingly to all relevant considerations under the criterion
10	Response is complete, specific and superior, both quantitatively and qualitatively

Table 2: Summary of Technical Evaluation Criteria Points 0-10

1. Degree to which the research proposal accurately and completely identifies an important California public interest environmental issue related to the generation, transmission, distribution, and use of electricity.	Weighting Factor: 1.5 Possible Points: 15
2. Degree to which the proposed project identifies Barriers, Issues, and/or Knowledge Gaps.	Weighting Factor: 1.0 Possible Points: 10
3. Degree to which the proposed research identifies clear and measurable objectives.	Weighting Factor: 1.5 Possible Points: 15
4. The Project Narrative (Section 3.4), Products and due dates (Section 3.4 Item 7), Budget Summary (Form C) demonstrate that there is a high probability of project success.	Weighting Factor: 2.5 Possible Points: 25
5. The Principal Investigator and the Project Team are well qualified to conduct the project (Form D).	Weighting Factor: 1.5 Possible Points: 15
6. Overall technical merit and degree to which the project is likely to succeed.	Weighting Factor: 2.0 Possible Points: 20
Maximum Technical Reviewer Points:	100

After receiving the technical reviews and scores, the PIEREA Exploratory Grant Program Administrator calculates the averaged score. The scores will be used to establish the preliminary ranked-order list of proposals that will be presented to the Exploratory Grant Program Committee. The PIEREA Exploratory Grant Program Administrator determines the appropriate cut off line for proposals to be considered in the next stage of review by selecting those proposals with an averaged score that meet the minimum 51 point requirement, up to the top thirty proposals (maximum). The PIEREA Exploratory Grant Program Administrator sends the rank-ordered list of proposal scores, proposal abstracts, and other relevant information to the Exploratory Grant Program Committee.

2.1.4. Exploratory Grant Program Committee

The Exploratory Grant Program Committee is responsible for (1) producing the preliminary scored and ranked list of projects for funding consideration by the Energy Commission, (2) reviewing the Exploratory Grant Program policies, procedures, and documents, and (3) making recommendations for changes to the Exploratory Grant Program Administrator. The Exploratory Grant Program Committee will be composed of individuals experienced in policy and programmatic activities related to the PIEREA Program. The members of the Exploratory Grant Program Committee will include, at a minimum, the Program Administrator and CEC staff (to be selected by the PIEREA Program Manager). They will help ensure that the projects recommended for funding are in alignment with PIEREA and enhance the current portfolio of projects.
The Exploratory Grant Program Committee will first re-evaluate the proposals to confirm that they satisfy all of the criteria listed in Table 1 (Initial Screening Criteria) and disqualify from further consideration any proposals that fail any of the screening criteria. Programmatic reviewers will score the merits of each proposal using the Technical Criteria summarized in Table 3, and described in detail in Appendix 3 (Program Committee Evaluation Criteria).

Proposals that pass screening will then be evaluated and scored using the Exploratory Grant Program Committee evaluation criteria, with a maximum of 50 points available. For each proposal, the Exploratory Grant Program Administrator will calculate the averaged score of the programmatic reviews and then add the averaged score to the technical score to get the final total score.

The Exploratory Grant Program Committee will prepare a final recommended rank-ordered list of the proposals and make a funding recommendation based on available funding.

The Exploratory Grant Program Committee will also review the Exploratory Grant Program policies, procedures, and documents and make recommendations for changes to the Exploratory Grant Program Administrator.

Table 3: Summary Program Committee Evaluation Criteria Points 0-10

1. Degree to which the research proposal identifies an important California public interest environmental issue related to the generation, transmission, distribution and use of electricity.	Weighting Factor: 1.5 Possible Points: 15
2. Degree to which the proposed research identifies Barriers, Issues, and/or Knowledge Gaps.	Weighting Factor: 1.0 Possible Points: 10
3. Degree to which the proposed research identifies clear and measurable objectives.	Weighting Factor: 1.0 Possible Points: 10
4. Overall merit.	Weighting Factor: 1.5 Possible Points: 15
Maximum Programmatic Reviewer Points:	50

2.1.5. Research, Development and Demonstration Committee (RD&D Committee)

The Exploratory Grant Program Manager discusses the proposal selection process, the final rank-ordered list, and the funding recommendations from the Program Committee with the RD&D Committee. The RD&D Committee may make a funding recommendation to the full Commission based on these recommendations and on other Energy Commission program considerations. The RD&D Committee may disapprove any or all of the recommendations, for any or all of the following reasons:

- The proposal is counter to the development and implementation of a robust public interest RD&D portfolio of projects that address California's energy needs by focussing on the RD&D plans covering the PIER subject areas.
- The proposal is counter to the objective of balancing risks, timeframes and public benefits in a manner consistent with California's energy policies.
- The proposal is counter to the objective of creating a public interest RD&D knowledge base and disseminating information that will allow citizens, businesses, government and other entities to make informed decisions concerning energy technologies and services.
- The proposal is counter to the objective that the public interest RD&D program is connected to the market.
- The proposal is counter to the energy policies of the State of California including, but not limited to, the policies for PIER and for energy in California as expressed in the following legislation and reports: AB 1890 (Chapter 854, September, 1996), SB 90 (Chapter 905, October, 1997), SB 1038 (Chapter 515, September, 2002), Warren-Alquist Act (CEC Publication No. P160-98-001), Strategic Plan Report on Implementing the RD&D Provisions of AB 1890 (P500-97-007, June 1997), 1997 California Biennial Energy Plan (P105-97-001), and the Five-Year Investment Plan, 2002 Through 2006 (P600-01-004).

Any proposal disapproved by the RD&D Committee will not affect the score of any other proposal. The RD&D Committee decides which ranked proposals to forward to the full Commission to consider for funding. The RD&D Committee reserves the right to skip over disapproved proposals and to recommend funding proposals ranked lower on the list.

2.1.6. Energy Commission Business Meeting

The final rank-ordered list and the recommendations from the RD&D Committee will be considered at a regularly scheduled business meeting. The Commission, at the Business Meeting, reserves the right to reject any or all of these recommendations and to select any proposal from the final rank-ordered list. Any proposal rejected by the full Commission will not affect the score of any other proposal.

Proposals that receive Commission approval for funding will be posted on the PIEREA Exploratory Grant Program area of the Commission web site and will receive an award letter.

2.2. Unfunded Proposals

Following the Commission approval of project funding, those applicants whose proposals were not funded will receive a letter from the Program Administrator that describes the reasons for rejection.

All materials submitted in response to a PIEREA Exploratory Grant Program solicitation become the property of the State of California for disposition purposes. Except for a file copy that is retained for future reference, all extra hard copies of the grant application will be shredded at the end of the evaluation process.

2.3. Grant Applicant Feedback and Disputes

An applicant may obtain a debriefing regarding an unfunded proposal in the following two ways:

1. By contacting the Program Administrator to discuss the proposal.
2. By submitting a written (letter or email) list of questions or issues within 30 days of receiving the status letter on the proposal in question. The Program Administrator will respond to written inquiries in writing (letter or email) within 30 days after the request has been made.

2.4 Policy Regarding Follow-On Funding

The PIEREA Exploratory Grant Program was designed to serve as a one-time funding source for projects seeking to establish foundational information necessary to justify larger funding commitments. Successful projects may be eligible for follow-on awards in the PIER program, outside of the PIEREA Exploratory Grant Program. Performance on Exploratory grants will be a consideration in any future request for funding through the PIER Program.

2.5 Modifications

To make a project acceptable, the Commission or Program Administrator retains the right to negotiate minor changes to a proposal's Project Narrative and/or budget at any time during the evaluation, approval and agreement execution process. Such modifications would be made to:

- Adjust the project scope to produce the information needed;
- Adjust project budget to comply with guidelines related to authorized expenses;
- Avoid duplication of work;

- Reduce administrative requirements; and/or
- Include tasks necessary for project success.

2.6 Intellectual Property Rights

Copyrightable material and all patent rights for inventions conceived, or first actually reduced to practice in the course of the grant project, will be the property of the Awardee subject to the State retaining certain limited use rights (see Model Grant Agreement document for details). The Awardee must disclose to the Exploratory Grant Program Administrator, on a confidential basis, all such inventions. All materials submitted in the performance of the grant will become the property of the State of California for disposition purposes. The Exploratory Grant Program Administrator will take reasonable precautions to protect the intellectual property rights of the applicants and Awardees by requiring all personnel who handle, screen or review proposals and deliverables containing proprietary/confidential information to sign a non-disclosure agreement (see sample non-disclosure agreement attached to the end of this manual).

Part 3. GRANT APPLICATION INSTRUCTIONS

3.1. Grant Application Package Checklist

The application package must be assembled **in the order shown in the checklist below**. Additional instructions for filling out the forms are provided with each form. Provide all information necessary to adequately review the proposal, including all information requested in this Manual. Do not incorporate by reference information contained in videotapes or in other extraneous materials. The full application package submitted will be the basis for approving or denying funds for the proposed project.

Electronic submission is preferred. However, if your institution requires hardcopy submission of a proposal application, you may mail the original and 8 full single-sided copies including any supporting documents. The original should be bound only with a spring clip; the other eight copies should be bound only with a staple in the upper left corner. **No covers or other types of bindings are allowed**.

For electronic submission only: Cover email must be from an institutional representative who is authorized to contractually commit the submitting organization to performing the proposed work; this must be the same individual listed on the Grant Application Cover Page. The email must identify the Principal Investigator and the title of the proposal, and should state the following: "The attached application constitutes [Institution Name]'s official submission of a proposal in response to RFP No. CIEE-EXP-2002." The email must give the title of the authorized institutional representative (e.g., Contracts and Grants Officer), and provide contact information, including address, phone, and fax. If this is a multi-institution submission, the email must also state that the lead (submitting) institution has received concurrence on the proposed work from the authorized institutional representatives of all participating institutions.

- ☐ Form A: Grant Application Cover Page ***(signed and dated, if submitted in hardcopy)***
- ☐ Project Summary ***(2 pages maximum, single-spaced; insert page break after project summary)***
- ☐ Project Narrative ***(10 page maximum, single-spaced)***
- ☐ Appendices to Narrative ***(optional - 10 page maximum, single-spaced.)***
- ☐ Form B: Certifications
- ☐ Form C: Proposed Budget Summary ***(attach short budget narrative if required)***
- ☐ Form D: Project Personnel and Team Qualifications (one page maximum)
- ☐ Key Personnel Résumés (Curriculum Vitae) ***(A maximum of two pages per person. Required for Principal Investigator, Project Manager, and other technical personnel critical to the project's success.)***
- ☐ Form E (***electronic submission only***): Recommended Reviewers

If submitting hardcopy, the following optional items should be loose or clipped to the original application package and not bound with the proposal copies:

- ☐ Cover Letter ***(optional; one copy)***
- ☐ Form E: Recommended Reviewers ***(optional; one copy)***

Faxed copies will not be accepted.

3.2 Formatting Requirements for All Text Sections

All electronically submitted documents should be in either Microsoft Word or PDF format. Page margins no less than 1", font size no smaller than 12 points; either single- or double-spaced is acceptable. Page numbers on the upper right-hand corner of each text page. Single-sided.

3.3. Project Summary

Provide a separate, two-page, non-proprietary summary description of the grant project. Title the page with "Project Summary" followed by the project title and name of the Principal Investigator and submitting institution. The project summary should summarize the key items requested in the recommended narrative format specified in Part 3.4. The description should be written at a level that could be understood by the general public with sufficient information to stand on its own. You must make a notation on the page if the project summary contains proprietary information. If a proprietary proposal is selected for funding, you will be asked to provide a non-proprietary version of the project summary for web publication.

3.4. Project Narrative

Provide a project narrative that is no more than 10 pages in length (not counting reference list or acronyms list) that describes the project plan in detail. Key supporting documents referenced in the narrative such as photos, charts, drawings, blueprints, graphics, letters of support and excerpts from key articles may be included as appendices to the project narrative. Appendices are restricted to a maximum of 10 pages. The project narrative must address the content items identified in the following recommended outline; however, the sequence in which the information is presented may be determined by the applicant. Project narratives that cite past research, trade publication articles, etc. must include a reference list. All acronyms should be spelled out in full when first cited.

Project Narrative

1) Project Goal

Accurately and completely identify:

- the importance of your research as it relates to an important California public interest environmental issue related to the generation, transmission, distribution and use of electricity.
- the environmental problem that is being addressed and clearly demonstrate the electricity connection.
- the energy-related environmental public benefits that could be derived by further research built on the findings from the proposed project.

2) Project Objective(s)

Describe clear and measurable objectives that demonstrate how the project will:

- Support the early development of promising, new scientific concepts;
- Lay the foundation for larger-scale research;
- Be useful in determining the need for new PIEREA planning efforts (roadmaps);
- Improve understanding of key processes that affect environmental quality in California as a result of electricity generation, transmission, distribution, and/or use; and /or
- Provide information in key areas necessary for more informed decision and policy making.

3) Impact on **Environmental** Problem and/ or **Energy** Problem / Benefit to California rate payers and electric market (s)

- Quantify the potential impact of the project on the environmental problem being addressed.
- If unable to quantify, describe in qualitative terms the types of benefits for California that the project will produce for addressing the environmental problem targeted by this project.
- Where appropriate, quantify the potential impact to the electric consumer in terms of savings due to reduced cost per kWh, reduced kWh consumption, increased reliability, etc.
- Where appropriate, quantify the potential benefit in terms of energy and cost savings to the state of California as a whole.

4) Scientific and/or Technical Issues, Barriers, Knowledge Gaps, and State-of-the-Science

- Identify the scientific and/or technical obstacles
- Summarize the relevant results of a current literature/Internet search. Point out where your work will extend the existing knowledge base.
- Compare existing processes, services, and/or products that perform the same or similar functions as the proposed concept. Clearly show the relevant differences (e.g., cost, reliability, efficiency, functions, etc.). We recommend that comparison data be placed in table format when practical.

5) Primary Tasks and Deliverables
   - Provide a description of the work that will be conducted to accomplish the primary tasks.
   - Provide a description of key deliverables (e.g., quarterly reports, draft and final reports).
   - Indicate when deliverables will be submitted.

Applicants should take into consideration the evaluation criteria listed in Appendix 1 (Technical Evaluation Criteria) when writing the narrative.

3.5. Proprietary Information

If the proposal contains proprietary information, as indicated on Form A, Item H, then the applicant must clearly mark those sections in the application. For electronic submissions, the footer of each proprietary page or section must contain the words "Contains proprietary information," and the appropriate text should be highlighted. For hardcopy submissions, this could be in the form of a classification stamp at the top and bottom of classified pages or boxes placed around specific paragraphs or annotations in the margin that clearly identify those sections that are proprietary. Applicants are encouraged to limit the proprietary information to only that which is necessary to adequately assess the technical merits of the proposed concept. Classifying an entire proposal as proprietary is not acceptable.

Appropriate procedures to safeguard proprietary or confidential information will be employed by the Program Administrator, the Commission, its subcontractors and technical reviewers.

3.6. Budget Narrative

Attach a budget narrative to Form C (Proposed Budget) to explain any expenses listed in Items D, E, F, and H (subcontracts/consultants, equipment, travel, and other direct cost items greater than $500). See instructions for Form C.

Part 4. GRANT AWARD AGREEMENT

4.1. Grant Agreement

Once a grant is approved for funding by the Commission, the PIEREA Exploratory Grant Program Administrator will send an award notification letter to the applicant containing a list of any outstanding issues that need to be resolved prior to executing the agreement. The agreement will be mailed under separate cover once all outstanding issues have been resolved. The agreement must be signed by both parties before work may begin or expenses reimbursed.

The Program Administrator intends to base agreements on the Model Grant Agreement that is available for viewing and downloading from the California Energy Commission's web site at www.energy.ca.gov/contracts. All grant applicants should review the standard terms and conditions contained in the Model Grant Agreement prior to submitting a proposal, and should be prepared to identify those issues that need to be resolved in the event of an award. Failure to agree to the terms, conditions and requirements of the grant agreement are grounds to cancel the award.

4.2. Grant Performance

4.2.1. Reimbursement Invoices

PIEREA Exploratory Grant Program funds are distributed only for reimbursement of project expenses. Invoices for reimbursement should be submitted on a monthly or quarterly basis to the Program Administrator for periods not less than one month. Reimbursement invoices submitted to the Program Administrator will be paid within 30-60 days of receipt, unless contested. The Program Administrator retains the right to withhold payment for the following reasons: (a) progress reports are not current; (b) the progress reports contain insufficient detail to assess Awardee's progress; or (c) there is evidence of poor performance.

The last payment will not be paid to the Awardee until the Program Administrator has reviewed the final deliverables and judged them acceptable.

4.2.2. Deliverables

Awardee must submit all deliverables to the Program Administrator. The minimum required deliverables include:

(a) Progress Reports: A progress report is required following the end of every standard calendar quarter; if a project begins in the middle of a calendar quarter, the progress report will cover whatever work has been done during the quarter. Progress reports must be delivered within 10 days of the end of each quarter.

(b) Final Report: A draft report is to be submitted for review and comments (includes abstract, executive summary, and main report). The Program Administrator will review the draft report and provide written comments and recommendations. The Awardee is responsible for incorporating the recommended changes in the final report.

4.2.3. Tax and Legal Issues

If in doubt, Awardees should consult with legal and tax advisors (at the Awardee's expense) to fully understand the legal and tax obligations incurred when entering into a grant contract.

California Energy Commission PIEREA Exploratory Grant Program **GRANT APPLICATION COVER PAGE**	**FORM A**

A Project Title: _____

B. Project Focus Area: (***Indicate the one that most applies) [for electronic submission: select and press "n" to check box]***

- ❑ Indoor Air Quality
- ❑ Outdoor Air Quality
- ❑ Aquatic Resources
- ❑ Land Use and Habitat
- ❑ Global Climate Change
- ❑ Other (Specify: _____)

C. Applicant Category: ***[for electronic submission: select and press "n" to check box]***

- ❑ Individual
- ❑ Small Business
- ❑ Large Business
- ❑ National Laboratory
- ❑ Academic Institution
- ❑ Non-Profit
- ❑ State Agency
- ❑ Federal Agency
- ❑ Other (Please specify: _____)

D. Grant Funding Requested: $_____ ***(maximum allowed $75K)***

E. Proposed Project Duration: _____ ***(maximum duration 12 months)***

F. Principal Investigator

Name:	Address:
Phone: Fax:	
Email:	
Organization:	
Position/Title:	

G. Authorized Institutional Representative: ***(serves as point of contact for contractual issues)***

Name:	Address:
Phone: Fax:	
Email:	
Organization:	
Position/Title:	
Signature:	Date:

H. Proprietary/Confidential Information:

- ❑ NO – Proposal does not contain proprietary information, unrestricted distribution authorized.
- ❑ YES - Proposal contains proprietary information, restrict distribution and disclosure.
  (clearly mark and label those sections that are proprietary on all copies)

FORM A
INSTRUCTIONS

Grant Application Cover Page

Item A: Project Title

Item B: Project Focus Area
Check one box that corresponds to the PIEREA Program area that is most representative of the proposed work.

Item C: Applicant Category
Check one box that represents the category you are applying for a grant under. The applicant categories are defined in Part 1 of this manual. The category marked in Item C must match the information certified on Form B.

Item D: Grant Funds Requested
Specify the amount of grant funds needed to complete the project, not to exceed $75K. All project costs must be covered by this amount, unless the applicant or other sources are contributing funds to this project.

Item E: Proposed Project Duration
Specify how many months you need to complete the project. The project's duration cannot exceed 12 months. Include the time it takes to complete the final report after all data collection and analysis functions have been performed.

Item F: Principal Investigator

Item G: Authorized Institutional Representative
This individual must be authorized to commit the organization to perform the proposed work. If the application is submitted via hardcopy, this person must sign the form; if it is submitted electronically, the cover email must be from the authorized institutional representative.

Item H: Proprietary/Confidential Information
Indicate if the proposal contains any proprietary information that requires protection. Clearly mark and label those sections that are proprietary on all copies.

California Energy Commission PIEREA Exploratory Grant Program CERTIFICATIONS	FORM B

A. APPLICANT ELIGIBILITY CERTIFICATION

- ❑ **Individual** Must be acting independently. If employed or affiliated with an organization, applicant has authorization from the organization to pursue grant research exclusively as an individual with no rights reserved to the organization. The individual, not the organization, retains all intellectual property rights accrued from the grant project ***(if employed or affiliated with an organization or business, specify in the space below any financial interest the organization or business has in the proposed project)***. NOTE: Applicants who are employed by a college/university or affiliated laboratory are not eligible to apply as individuals; submissions ***must*** be made through the applicant's home institution.
- ❑ **Small Business** PIER uses the Federal definition of small as specified in Title 13, Code of Federal Regulations, Part 121 (13 CFR § 121), Small Business Size Regulations (www.sba.gov/regulations/siccodes/). Size requirement varies based on type of business with the average requirement being either prior year gross receipts of $5 million or total employees cannot exceed 500 ***(in the space provided below, specify your SIC Code and either the number of employees or gross revenues for prior year that qualify your organization as a small business).***
- ❑ **Large Business**
- ❑ **Non-Profit Organization** Possess IRS tax exemption.
- ❑ **Academic Institution** Public or private post-secondary institutions.
- ❑ **State and Federal organizations** State and Federal agencies, federal laboratories or other Federally Funded Research and Development Centers

Item (A) Information:

B. MULTIPLE AWARDS FOR THE SAME OR SIMILAR RESEARCH

- ❑ Checking this box certifies that the grant applicant acknowledges that in the event they receive an PIEREA Exploratory Grant Program grant they agree to notify the Program Administrator if they enter into a concurrent contract that requires the same or similar research as proposed in this application and in this event further agrees to limit reimbursement from the PIEREA Exploratory Grant Program to costs that are not covered by other awards. If the applicant has previously received State or Federal funds (such as SBIR awards) to develop the proposed concept, **attach a short description of the work completed and provide contact information (phone and/or email address) for the project managers at the funding agencies**.

C. CONCEPT ORIGINALITY

- ❑ Checking this box certifies that the grant applicant has already performed a thorough search of the existing published literature and has determined that the proposed concept is original.

FORM B
INSTRUCTIONS

Certifications

Item A: Applicant Eligibility Certification

You must check one of the six boxes to indicate the applicant eligibility criteria under which you are applying. Even if you qualify under more than one criteria (i.e., sole proprietor vs. individual), indicate the **one** that best fits your situation. Different categories have different restrictions (i.e., ability to invoice indirect expenses and ownership of intellectual property) to which the applicant will be held. Provide the additional information requested (SIC codes, number employees, gross revenues etc.) in the space provided. Fraudulent misrepresentation of eligibility is grounds for immediate termination of award.

Item B: Multiple Awards for Same or Similar Research

This certification prohibits applicants from seeking reimbursement from more than one funding source for the same work and must be certified in order to qualify. Applicants must disclose if they have previously received State or Federal funding for work related to the PIEREA Exploratory Grant Program proposal. Prior performance will be an evaluation consideration.

Item C: Certification of Concept Originality

This certification is to ensure the grant applicant has performed a reasonable search of the published literature and patents to determine that the proposed concept and research is original.

California Energy Commission
PIEREA Exploratory Grant Program
PROPOSED BUDGET SUMMARY

FORM C

Project Title: _____
Performing Institution: _____
Principal Investigator: _____
Period of Performance: _____

		Effort WM or FTE	Rate	Est Cost	Total Cost
A.	DIRECT LABOR				
	PI:	0.00	0	0	
	_____	0.00	0	0	
	TOTAL Labor	0.00			0
B.	FRINGE BENEFITS	Rate	X Base	Est Cost	
		0.0%	0	0	
	TOTAL Fringe Benefits				0
C.	TOTAL SALARIES AND FRINGE (A+B)				0
D.	SUBCONTRACTS and CONSULTANTS (Explanation attached)				0
E.	EQUIPMENT and SINGLE PURCHASES over $5,000 (Explanation attached)				0
F.	TRAVEL (Explanation attached)				0
G.	MISCELLANEOUS EXPENSES				0
H.	OTHER DIRECT COSTS (Explanation attached)				
	H.1 _____			0	
	H.2 _____			0	
	TOTAL Other Direct Costs				0
I.	TOTAL DIRECT COSTS (C thru H)				0
J.	INDIRECT COSTS	Rate	X Base	Est Cost	
		0.0%	0	0	
	TOTAL Indirect Costs				0
K.	TOTAL COSTS (I+J)				0

FORM C
INSTRUCTIONS

Proposed Budget and Narrative

General Information:
This budget form is available as an Excel file on the California Energy Commission's web site at www.energy.ca.gov/contracts with the math formulas inserted. Attach a budget narrative to this form if budget entries are made in Items D, E, F, or H.

The following **costs** are generally **not allowed** in PIEREA Exploratory Grant projects:

- Costs incurred by applicants in preparing proposals (including travel and personal expenses).
- Project debts or costs incurred before Commission approval and the effective date of the grant agreement.
- Costs for lobbying or attempting to influence any public official.
- Costs associated with protecting intellectual property.
- Costs to offset obligations of individuals or work not associated with the approved project.
- Procurement of general-purpose equipment (e.g. general-purpose computers, software, fax machines, copiers, office furniture and tools) that is essential to the project and that could be leased or rented at lower cost.
- Costs of news releases announcing the results of a PIEREA Exploratory Grant project.
- Relocation costs of employees or staff members.
- Financial aid, scholarships, or fellowships, except when paid under established campus policy as part of the compensation for research performed in the PIEREA Exploratory Grant project during the term of the contract.

Item A. Direct Labor
Labor expenses accrued by the Awardee and team members during the term of the grant agreement are allowable to the extent that the compensation is reasonable for each individual's skill level and experience and conforms to consistently-applied compensation policies of the individual's organization.

Provide name and title of all senior research personnel. For as-yet unidentified persons, state the personnel category (e.g., technician, graduate student, administrative assistant, machine shop).

Show effort level (e.g., FTEs or work-months(WM)), rate, and cost for each researcher or personnel category. If both academic year and summer rates are used, show separately and identify as such (e.g., "Student, summer" and "Student, acad yr."). For pooled effort recharges, average pay rates are acceptable provided they are noted in the Budget Explanation page.

Item B. Fringe Benefits
Fringe benefits are allowable as a direct cost (if not included as an indirect cost) in proportion to the salary charged to the grant and provided the expense is based on formally established and consistently applied compensation policies of the individual's organization. If a student receives compensation for hours worked and tuition fees, show the tuition as a separate line in Item H. Applicants who apply as an "***Individua***l" should not charge Fringe Benefits, and instead should show a fully loaded hourly rate.

Show fringe rate and base to which rate applies. If different rates apply for different labor categories or time periods (e.g., career vs. student, summer vs. academic year), show separately and discuss on Explanation page.

Item D. Subcontracts and Consultants
No more than 40% of an award may be outsourced, and all subcontractors must satisfy the applicable clauses in the grant agreement. If a subcontractor has been identified who is critical to the success of the project, the application must include a letter from the subcontractor confirming that they concur with the statement of work and intend to participate in the project. Payments to consultants are allowed provided the costs are reasonable and commensurate with the services provided and are included and itemized in the approved budget for the grant.

- Subcontracts: On Explanation page, give name of each subcontractor, a brief description of work, and total cost. Include curricula vitae for the subcontractor's key personnel. For any subcontract over $10,000, attach a complete budget following the same format outlined here.
- Consultants: On Explanation page, state the name of each consultant (or function, if an individual has not yet been identified), effort level (hours or days), and rate charged. Give brief description of activities/tasks (e.g.,

"responsible for integrating time-of-use curves into calculation tool"). Include curricula vitae for any consultant who has been identified.

Item E. Equipment and Single Purchases over $5,000
Major equipment is defined as non-expendable, tangible property which has an acquisition cost of $5,000 or more per unit and a useful life of two years or more. Major equipment purchases and items costing in excess of $5,000 will be considered allowable as direct costs provided that (1) the item is necessary for completing the primary objectives of the grant research, and (2) renting or leasing the item at lower cost is not an option.

All major equipment and single purchases over $5,000 must be itemized in the budget narrative. All equipment with a unit cost of $5,000 or more will be purchased exclusively by the PIEREA Exploratory Grant Program Administrator and will be subject to the following terms and conditions:

- Title to all non-expendable equipment purchased with PIEREA Exploratory Grant Program funds shall remain with the Program Administrator.
- The Awardee shall assume all responsibility for maintenance, repair, destruction and damage to equipment while in the possession of or subject to the control of the Awardee (costs for maintenance and insurance may be borne by the grant).

If an Awardee desires to obtain ownership of the equipment, a request must be submitted at the end of the project which includes a description of how the equipment in question would be used to further energy research.

Item F. Travel
Travel costs are allowable if they are required to conduct the research and are reasonable for a small grant effort. Conference travel is allowable if it occurs towards the end of a project for the purpose of presenting a paper on the results of the research. Applicants should consider cost-sharing conference travel in excess of $1500, or risk having the travel deleted from the budget. For travel to be reimbursed, it must occur within the term of the project as specified on the grant agreement. Reimbursement of travel expenses will be in accordance with the guidelines contained in Section 4.2.1.

For each anticipated trip, give ***specific*** information regarding destination, estimated air fare/transportation costs, lodging/per diem, registration fees, and other related costs. Foreign travel is not permitted without prior approval. If more than one person will participate in a specific trip, indicate the number of people traveling.

Item G. Miscellaneous Expenses
Include office supplies, postage, telephone, miscellaneous operating costs, and low-value materials under $500 that are associated with the work.

Item H. Other Direct Costs

List items that are in excess of $500 that are necessary to the performance of the work, including utilities, graduate student tuition remission, workshops, and departmental recharges. Details must be provided in the budget narrative; failure to include an explanation may result in disqualification of the application. Other items to include:

- Equipment Rental or Lease: The cost of renting or leasing equipment is allowable provided the charges are reasonable. General-purpose equipment (i.e., computers, printers, furniture, test equipment, tools, software) that is essential to the project may be rented but not purchased unless renting is more expensive or not practical. In those instances where a case can be made for purchasing general-purpose equipment, provide the rationale in the budget narrative. Disposition of general purpose equipment at the end of the project will be determined by the Program Administrator.
- Facility Lease/Modification: The cost of leasing or renting commercial workspace is acceptable; however, individuals cannot charge rent for any portion of their private residence, and a business that charges an indirect rate cannot charge a lease expense for space or equipment that they already own. PIEREA Exploratory Grant funds cannot be used to fund construction or facility improvements. However, rearrangement and alteration costs to adapt space or utilities within a completed structure to accomplish the objective of the grant-supported activity, which do not constitute construction, and aggregate to less than $10,000, may be allowable provided that the requirement is clearly defined in the budget narrative.

Item J. Indirect Costs

Not applicable for Individuals, who should include appropriate overhead costs in their fully-loaded labor rate. Small businesses, non-profits, and academic institutions that choose to recover indirect costs may use an established rate based on the following priority, and must indicate in the Budget Narrative which rationale they are using:

1. The rate used when doing similar research for the State of California or other state government;
2. The rate used when doing similar research for the Federal Government; or
3. The rate used and consistently applied to similar research contracts performed in the civilian sector.

If no indirect rate has been established, then a maximum indirect rate of 20% will be allowed on this grant. Excessive indirect rates that are deemed to adversely impact the quantity or quality of the research will be a consideration when scoring proposals. Individuals and organizations that do not claim an

indirect rate may charge as a direct expense the incremental cost of obtaining the insurance coverage specified in the Model Grant Agreement.

For the purpose of this program, general and administrative expenses (G&A) is considered an indirect cost.

In the Budget Narrative, indicate any exclusions from the indirect cost base (e.g., subcontracts, graduate student fee remission, facilities lease costs).

Please double-check your figures to ensure that the categories add up. Total amount requested cannot exceed $75,000.

California Energy Commission PIEREA Exploratory Grant Program **PROJECT PERSONNEL**	**FORM D**

List all key technical personnel on the project who are critical to the success of the work, including the Principal Investigator and Project Manager, if they are separate individuals; indicate a descriptive title after each name (e.g., Electrical Engineer; Graduate Student Research Associate, etc.). In the space below, provide a brief summary of qualifications of the project team, including any existing facilities or specialized equipment that will be used on the project. Do not exceed one page. Attach résumés for all key personnel, not to exceed two pages each.

1. List of Key Personnel and Titles

2. Summary of Team Qualifications

California Energy Commission PIEREA Exploratory Grant Program **RECOMMENDED REVIEWERS**	**FORM E**

The grant applicant has the option to recommend technical reviewers that they would like the PIEREA Exploratory Grant Program Administrator to consider when deciding which technical reviewers to use for evaluating their proposal. The Program Administrator retains final decision authority on selecting reviewers. Please email this form to the Program Administrator.

First Recommendation

Name:	Address:
Phone: Fax:	
Email:	
Organization:	
Position/Title:	

Indicate why you consider this individual qualified in the subject area proposed.

Second Recommendation

Name:	Address:
Phone: Fax:	
Email:	
Organization:	
Position/Title:	

Indicate why you consider this individual qualified in the subject area proposed.

Third Recommendation

Name:	Address:
Phone: Fax:	
Email:	
Organization:	
Position/Title:	

Indicate why you consider this individual qualified in the subject area proposed.

FORM E
INSTRUCTIONS

Recommended Reviewers

General Information:

- This form is optional. Please email this form to the Program Administrator.

- The intent of this form is to assist the Program Administrator in identifying potential qualified technical reviewers for proposals. Of particular interest are individuals that possess expertise in very narrow and specialized areas of technology that the typical technical reviewer of energy research may not be familiar with.

- Do not recommend individuals that would have a conflict of interest in reviewing your proposal or would even give the appearance of conflict of interest or bias.

- The PIEREA Exploratory Grant Program Administrator retains the final authority to select the technical reviewers.

Appendix 1. Technical Evaluation Criteria

Points 0-10

1. Degree to which the research proposal accurately and completely identifies an important California public interest environmental issue related to the generation, transmission, distribution, and use of electricity. The proposal completely and accurately describes the environmental issue to be addressed by the proposed research, including the relationship of the issue to the generation, transmission, distribution, and use of electricity in California. The scientific description of the issue is in sufficient detail to determine that there are significant energy-related environmental public benefits that could be derived by further research built on the findings from the proposed project. (To the extent possible, the importance of the problem may be based on reviewers' evaluation of quantitative benefits (e.g. amount of NOx reduced)).	**Weighting Factor: 1.5** **Possible Points: 15**

2. Degree to which the proposed research identifies Barriers, Issues, and/or Knowledge Gaps. To the reviewer's knowledge, the proposal does not duplicate research. The proposal shows that the project approach is innovative or unique. To the reviewer's knowledge, the proposal clearly identifies, describes and quantifies (where possible) the barriers, issues and/or knowledge gaps. To the reviewer's knowledge, the barriers, issues, and/or knowledge gaps are directly relevant and important to obtaining a better understanding of the issue in California.	**Weighting Factor: 1.0** **Possible Points: 10**

3. Degree to which the proposed research identifies clear and measurable objectives. The proposal lists and describes clear and measurable objectives that will: · Support the early development of promising, new scientific concepts; · Lay the foundation for larger-scale research; · Be useful in determining the need for new PIEREA planning efforts (roadmaps); · Improve understanding of key processes that affect environmental quality in California as a result of electricity generation, transmission, distribution, and use; and/or · Provide information in key areas necessary for more informed decision and policy making. The research methods are appropriate for achieving the project's objectives and goals.	**Weighting Factor: 1.5** **Possible Points: 15**

4. The Project Narrative (Section 3.4), Products and due dates (Section 3.4, Item 7), Budget Summary (Section 3.6 and Form C) demonstrate that there is a high probability of project success. The Project Narrative demonstrates a clear, appropriate and complete effort. The Project Narrative is composed of a series of interconnected, logical, and discrete tasks. The Project Narrative lays out an approach and plan that is practical and feasible for accomplishing the stated goals and objectives. The Work Schedule reasonably appropriates time and budget with respect to the sequences of tasks, time allocated per task, and the use of labor, equipment, and facilities. If the research involves a particular environmental aspect – the schedule fits the necessary time of year to conduct the research. The budget is appropriate considering: (1) the significance of the barriers, issues, and/or knowledge gaps being addressed, (2) the project's objectives and goals, and (3) the level of effort described in the Project Narrative. The budget shows that key personnel will be committed to the project for the appropriate number of hours and functions to accomplish the tasks and deliverables, and the activities described in the Project Narrative .	**Weighting Factor: 2.5** **Possible Points: 25**

5. The Principal Investigator and the Project Team are well qualified to conduct the project (Form D). The applicant describes in detail, with substantiation, his or her past and current work in the research subject area. Accomplishments (not just activities) are described. The proposal demonstrates the applicant's awareness of current and prior work by others in the proposed research area. The proposal convincingly demonstrates, based on education, training and past experience, that the applicant and project team are capable of conducting all technical, administrative, and budgetary functions and responsibilities, including the ability to control cost, maintain the schedule, and report results and accomplishments in an effective manner. Degree to which the proposal is clearly written and internally consistent.	**Weighting Factor: 1.5** **Possible Points: 15**

6. Overall technical merit and degree to which the project is likely to succeed. Taking all factors into consideration, including those cited above, the overall technical merit of the proposal. To the reviewer's understanding, the likelihood that this project is feasible and is likely to succeed.	**Weighting Factor: 2.0** **Possible Points: 20**

Total Technical Reviewer Points:	

Appendix 2. Exploratory Program Committee Evaluation Criteria

	Points 0-10
1. Degree to which the research proposal targets an important California public interest environmental issue related to the generation, transmission, distribution, and use of electricity? The proposal targets an important environmental issue. The public benefits derived by research built on the findings from the proposed project in addressing/resolving the energy-related environmental problem are significant.	**Weighting Factor: 1.5** **Possible Points: 15**

2. Degree to which the proposal identifies Barriers, Issues, and/or Knowledge Gaps. To the reviewer's knowledge, the proposal does not duplicate research. The proposal shows that the project approach is innovative or unique. To the reviewer's knowledge, the proposal clearly identifies, describes and quantifies (where possible) the barriers, issues, and/or knowledge gaps. To the reviewer's knowledge, the barriers, issues, and/or knowledge gaps, are directly relevant and important to obtaining a better understanding of the issue in California.	**Weighting Factor: 1.0** **Possible Points: 10**

3. Degree to which the proposed research identifies clear and measurable objectives. The proposal lists and describes clear and measurable objectives that will: · Support the early development of promising, new scientific concepts; · Lay the foundation for larger-scale research; · Be useful in determining the need for new PIEREA planning efforts (roadmaps); · Improve understanding of key processes that affect environmental quality in California as a result of electricity generation, transmission, distribution, and use; and/or · Provide information in key areas necessary for more informed decision and policy making. The research methods are appropriate for achieving the project's objectives and goals.	**Weighting Factor: 1.0** **Possible Points: 10**

4. Overall merit. The proposal is original and will enhance the PIEREA's portfolio of projects. To the reviewer's understanding, the likelihood that this project is feasible and is likely to succeed.	**Weighting Factor: 1.5** **Possible Points: 15**

Total Programmatic Reviewer Points:	

Appendix 3. Research Restrictions

The following research areas are included in newly approved projects and/or the short-term objectives identified in PIEREA or other PIER research plans, and they are restricted from awards from the Exploratory Grant program. These restrictions apply in order to prevent the same proposal from being submitted to multiple programs within PIER, to avoid institutional confusion over which PIER program the applicant is soliciting, and to avoid the duplication of research. The research restrictions are listed in the following order: Land-use and Habitat, Aquatic Resource, Air Quality, and Global Climate Change. For more information about PIER research see the PIER web page www.energy.ca.gov/pier/energy/index.html.

LAND-USE AND HABITAT

A Roadmap for PIER Research on Avian Interactions with Wind Turbines in California.

- Update Wind Turbine Effects Bibliography
- Continue Studies to Assess Turbine/Site Characteristics Associated with Fatalities
- Develop a Risk Assessment Model
- Conduct an Altamont Pass Wind Resource Area (WRA) Repowering Study
- Identify Risks of Potential Wind Resource Areas
- Conduct a Study of Habitat Manipulation Feasibility
- Conduct Video Monitoring at High-Risk Wind Turbines

Update Wind Turbine Effects Bibliography
Collect, annotate, and archive all available literature from 1996 to present in order to update the ***Effects of Wind Energy Development: An Annotated Bibliography,*** the original annotated bibliography produced for the California Energy Commission that compiled available literature on the effects of wind energy on wildlife from 1970 to 1995.

Continue Studies to Assess Turbine/Site Characteristics Associated with Fatalities
Continue studies in the Altamont WRA that are evaluating turbine and micro-site characteristics that may be associated with higher avian fatality rates (e.g., tip speed, rotor diameter, turbine position and spacing, turbine type and height, and micro-topography). Expand the study area to include larger sample sizes of different turbine types.

Develop a Risk Assessment Model
Develop a model that evaluates the micro-site characteristics that increase the risk of avian fatalities.

Conduct an Altamont Pass Wind Resource Area Repowering Study
Evaluate effects of planned repowering the Altamont Pass WRA on birds and field-test the hypothesis that the replacement of old wind turbines with newer larger capacity wind turbines will significantly reduce avian fatalities.

Identify Risks of Potential Wind Resource Areas
Conduct a meta-analysis of U.S wind turbine studies that have employed the standardized National Wind Coordinating Committee methodology to determine thresholds of avian density, site characteristics, and other variables that allow preconstruction assessment of a level of avian risk.

Conduct a Study of Habitat Manipulation Feasibility
Conduct a feasibility study on manipulating grazed annual grassland to discourage prey abundance in areas that present a high avian fatality risk in the Altamont Pass WRA.

Conduct Video Monitoring at High-Risk Wind Turbines
Use video monitoring equipment at wind turbine sites of known risk to birds to: (1) monitor recordings to observe bird fatalities or identify behaviors that would indicate causes of collisions with wind turbines, and (2) evaluate the behavior of birds at different wind turbine configurations and site characteristics.

***A Roadmap for PIER Research on Avian Power Line Electrocutions in California*.**

- Standardize Mortality Estimation
- Electrocution Risk Assessment
- Risk Reduction Research and Development
- Develop Standardized Monitoring Protocol
- Update Avian Electrocution Document and Develop Bird Safe Electrical Line Building Codes
- Develop System-Wide Reporting Requirement
- Research and Create a Clearinghouse for Data and Information Relating to Avian Electrocution

Standardize Mortality Estimation
Develop or identify a standardized method for estimating electrocution mortality incorporating scavenger bias.

Electrocution Risk Assessment
Determine the relative electrocution risks associated with various pole and distribution structure designs.

Risk Reduction Research and Development
Evaluate the strengths and weaknesses of current mitigation and remediation device designs and create new or modified designs with the objective of reducing electrocution risk. Develop a risk assessment model that researchers, developers, and decision-makers can use to assess the risk of different pole and structure types in a particular area. Develop and support an updated training course of the Avian Power Line Interaction Committee's ***Suggested Practices*** for reducing bird electrocutions.

Develop Standardized Monitoring Protocol
Develop a standardized protocol for consistently monitoring electrocution mortality from pole lines.

Update Avian Electrocution Document and Develop Bird Safe Electrical Line Building Codes
Update ***Suggested Practices for Raptor Protection on Power Lines: The State of the Art in 1996***. Develop bird-safe construction guidelines that could be adopted by the California Public Utilities Commission and possibly incorporated into future revisions of General Order No. 95.

Develop System-Wide Reporting Requirement
Conduct a scoping study to document policy needs and potential impediments to implementing a reporting policy.

Research and Create a Clearinghouse for Data and Information Relating to Avian Electrocution
Develop a database structure and storage and maintenance system for centralized management of avian electrocution data.

***A Roadmap for PIER Research on Avian Collisions with Power Lines in California*.**

- Standardizing Mortality Estimation
- Testing and Documentation of Diversion Device Efficacy
- Test and Document Effectiveness of Remote Collision Detection Devices
- Determine Collision Risk Levels Associated with Potential High-Avian-Use Habitats
- Determine the Factors Necessary to Develop a Reporting Requirement

Standardizing Mortality Estimation
Develop a standardized method for estimating collision mortality from dead bird searches and remote sensing technologies.

Testing and Documentation of Diversion Device Efficacy
Determine the species-specific effectiveness of devices, their durability under varying field conditions, and their application on various transmission line designs in California.

Test and Document Effectiveness of Remote Collision Detection Devices
Expand on the current CEC/Electric Power Research Institute (EPRI) study in North Dakota measuring the effectiveness of Bird Strike Indicator (BSI) and Bird Activity Monitor (BAM).

Determine Collision Risk Levels Associated with Potential High-Avian-Use Habitats
Determine collision risk in wildlife habitats known to support concentrated avian use.

Determine the Factors Necessary to Develop a Reporting Requirement
Perform a scoping study to identify a method for creating a functional reporting requirement for avian collisions with power lines in California**.**

AQUATIC RESOURCES

A Roadmap for PIER Research on Hydropower's Influence on California Water Quality

- Improve Understanding of Aquatic Organisms' Response to Water Temperature
- Improve the Ability to Predict Water Temperature
- Improve the Ability to Predict the Effects of Sediment Transport
- Improve the Utility of Bioassessment and Indices of Biological Indexes

Improve Understanding of Aquatic Organisms' Response to Water Temperature
Conduct lab and field analyses of fish tolerance in response to water temperature, focusing on non-migratory salmonids (trout) and native riverine species, such as those species found in "Transitional Assemblages." Conduct lab and field evaluations of fish behavior in response to temperature variations in stream and river habitats, such as their use of thermal refugia. Conduct lab and field evaluations of the responses of fish, amphibians, and other aquatic species to temperature variation as a cue for such alterations as migration and life stage changes.

Improve the Ability to Predict Water Temperature
Enhance existing models or develop new ones (if necessary) to predict downstream temperatures from reservoir releases. Enhance existing stream and river segment models or develop new ones (if necessary) to enable hourly predictions. Conduct retrospective analyses to identify ways to improve methodology.

Improve the Ability to Predict the Effects of Sediment Transport
Develop and/or demonstrate new models, or enhance existing models, to predict downstream impacts of sediment releases on aquatic habitats. Develop and demonstrate methods to "pass through" appropriately sized sediment to enhance downstream habitats.

Improve the Utility of Bioassessment and Indices of Biological Indexes (IBIs)
Develop macroinvertebrate IBIs for the 5000–8000' elevation range of the Sierra Nevada. Analyze macroinvertebrate data to develop diagnostic guidelines for the impacts of hydropower operations on biological integrity. Develop fish IBIs for streams that have hydroelectric facilities. Possibly include amphibians, reptiles, periphyton, or other taxonomic groups into IBIs.

A Roadmap for PIER Research on Fish Passage at Hydropower Facilities in California

- Develop Fish Passage Information Needs.
- Predictive and Descriptive Models for Fish Passage in California
- Fish Passage for Riverine Species
- Determine the need for guidance and collection facilities to efficiently and safely expedite fish passage (juvenile salmonids and others) through large stratified reservoirs.
- Conduct a study to validate and demonstrate low- to no-maintenance fish screens that effectively exclude fish during power operation even when screens are exposed to high sediment and debris loading
- Develop Downstream Fish Passage Monitoring Guidelines

Develop Fish Passage Information Needs

Develop a prioritized list of important factors in determining the need for, and, if necessary, type of fish passage. Develop, based upon a review of current and past FERC re-licensing cases, as well as other efforts, the relative importance of the different criteria. Apply the fish passage and criteria and weighing factors to actual fish passage evaluations. Evaluate the use of decision support models to facilitate application of the fish passage criteria.

Predictive and Descriptive Models for Fish Passage in California

Conduct computational fluid dynamic (CFD) analysis of velocity and eddy distribution for different types of fish passage facilities including bypasses, ladders and surface collector systems. Based upon this work, demonstrate the costs and benefits of CFD analysis in fish passage analysis. Identify information and costs necessary for a successful CFD analysis.

Fish Passage for Riverine Species

Based upon existing information, identify native riverine species adversely effected by a lack of suitable fish passage. For these species, identify existing information on swimming speeds and other behavioral factors that influence fish passage. Collect through laboratory and/or fieldwork important information necessary to design and operate fish passage facilities for these species. Determine the need for guidance and collection facilities to efficiently and safely expedite fish passage (juvenile salmonids and others) through large stratified reservoirs.

Determine the need for guidance and collection facilities to facilitate fish passage through large stratified reservoirs.

Juvenile salmon rely on hydraulic conditions and other factors to guide them on their downstream migration. The presence of large, thermally stratified reservoirs does not provide these conditions with the result that fish may take a significantly longer period to move downstream. Greater residence time in the reservoir means a greater loss of salmon fry and other fish species. Evaluate whether this is an issue in California given the limited amount of major dams within California with fish passage facilities. If this is

an issue, evaluate potential approaches to expedite fish passage through such reservoirs.

Low- to no- maintenance Fish Screen Study
Conduct a study to validate and demonstrate low- to no-maintenance fish screens that effectively exclude fish during power operation even when screens are exposed to high sediment and debris loading.

Develop Downstream Fish Passage Monitoring Guidelines
Identify important criteria in determining fish passage effectiveness and the relative weight of each of these factors. Develop criteria for the use of different fish monitory technology, such as hydroacoustics, pit tagging and others. Evaluate criteria against published literature and through field-testing.

A Future Roadmap for PIER research on Instream Flow Determination for California Hydropower Facilities

Instream Flow Determination for California Hydropower Facilities
Any research dealing with improving existing or developing new models or methodologies for determining suitable aquatic habitat or flow to sustain aquatic freshwater ecosystems.

Current PIEREA Aquatic Resources Projects

INFORM

- Research that addresses the use of global climate models for runoff prediction.
- Research that addresses the use of ensemble forecasting for runoff prediction.

PULSE FLOWS

- Research that addresses the effect of pulsed, ramping or manufactured flows on aquatic species or habitats.

AIR QUALITY

A Roadmap for PIER Research on Distributed Generation (DG)

- Air Emissions Inventory and Characterization
- Dispersion Modeling to Identify Local Impacts
- Life Cycle Assessments of DG Technologies
- Emissions Reduction Technology, Fuel Treatment, and Process Improvements
- Systems Analyses of Distributed Generation Implementation

Air Emissions Inventory and Characterization
Improve the inventory of existing DG systems currently in use in California. Assess emissions of future DG systems. Support development and standardization of criteria pollutant test protocols that are capable of more accurately measuring lower emissions.

Determine emissions profiles of existing and emerging DG. Project the future market penetration of DG units in California.

Dispersion Modeling to Identify Local Impacts
Evaluate and improve existing modeling techniques and databases to predict the dispersion of emissions on ground-level concentrations. Conduct selected dispersion modeling field studies to develop and evaluate new theories and models. Conduct uncertainty analysis of dispersion modeling results.

Life Cycle Assessments of DG Technologies
Conduct a life cycle assessment of DG technologies, including environmental impacts of building, operating, and disposing of DG units.

Emissions Reduction Technology, Fuel Treatment, and Process Improvements
Evaluate the environmental performance of DG emissions reduction technologies, fuel treatment, and efficiency improvements from heat recovery and other process improvements. Initiate the development of necessary controls, fuel treatment, and other process improvements for DG options that are likely to be used on a widespread basis in the near term.

Systems Analyses of Distributed Generation Implementation
Project the future use of specific DG technologies in the state, in order to assess the future air emissions from these technologies. Model resulting air emissions under likely operating scenarios. Conduct trend and scenario analyses to determine how the units are used and their impact on emissions.

A Roadmap for PIER Research on Indoor Air Quality

- Indoor Air Quality Instrumentation
- Characterization of Ventilation and Indoor Environmental Quality (IEQ) – Small Commercial
- Characterization of Ventilation and IEQ – New Housing
- Compare Health in Schools to Ventilation Rates
- Office Equipment

Indoor Air Quality Instrumentation
Determine the standard specifications for indoor air quality measurements. Develop convenient, cost-effective monitoring devices and systems.

Characterization of Ventilation and IEQ – Small Commercial
Collect data characterizing ventilation and indoor air quality in small commercial buildings (< 5,000m^2). Conduct surveys of ventilation system types, conditions and performance, operation and maintenance practices, pollutant sources, indoor environmental quality conditions, and when possible, energy use.

Characterization of Ventilation and IEQ – New Housing
Design statistical sampling and survey the protocol. Conduct a pilot study of the protocol. Collect data characterizing ventilation and indoor environmental quality in new housing.

Compare Health in Schools to Ventilation Rates
Describe the ventilation rates in schools. Assess the association between ventilation rates and health symptoms. Describe other building characteristics in schools relevant to environmental health.

Office Equipment
Compile a list of pollutants from different types of equipment and materials. Develop a standard test method for characterizing emissions. Quantify the emissions rates from the different types of equipment and materials.

Research to be conducted in the PIER Buildings Program

- Develop/Improve System Design for Heating, Cooling, and Ventilating Buildings
- Develop Recommendations for Ventilation Rates and Improve Effectiveness of Ventilation Control Technologies
- Identify, Develop & Demonstrate Technologies & Strategies to Enhance Building System Operations
- Identify Issues & Develop Solutions for Energy-Related IEQ in California Homes
- Develop Solutions to Microbial Growth in Building Envelopes and Heating, Ventilation, and Air Conditioning (HVAC) Systems
- Develop Guidelines on IEQ Best Practices for Building Design & Operation

Develop/Improve System Design for Heating, Cooling, and Ventilating Buildings
Design, test and demonstrate new or improved HVAC components and/or systems. Focus research on unique needs of specific building types and uses (e.g. schools, small retail, large offices).

Develop Recommendations for Ventilation Rates and Improve Effectiveness of Ventilation Control Technologies
Document the health, comfort and energy effects of ventilation rates for specific building and occupancy types, climate, and HVAC system operations. Determine and understand effectiveness of existing ventilation control technologies. Develop and demonstrate new or improved ventilation control technologies and strategies.

Identify, Develop & Demonstrate Technologies & Strategies to Enhance Building System Operations
Develop metrics, protocols, tools and techniques to detect and diagnose IEQ problems. Identify and demonstrate technologies and practices that improve IEQ.

Identify Issues & Develop Solutions for Energy-Related IEQ in California Homes
Characterize energy-related features and operations of California homes that affect ventilation rates and compare these to the underlying assumptions in current building energy-efficiency standards. Identify problems in current construction practices, develop preventive strategies, and initiate training activities to educate construction professionals.

Develop Solutions to Microbial Growth in Building Envelopes and HVAC Systems
Identify components and features of building systems that pose risk of microbiologic contamination. Develop new cost-effective materials, assemblies, and treatments for building systems that prevent microbiological growth.

Develop Guidelines on IEQ Best Practices for Building Design & Operation
Develop and field test information products for ability to influence key decisions affecting energy performance and IEQ.

GLOBAL CLIMATE CHANGE

A Roadmap for PIER Research on Climate Change Monitoring, Analysis, and Modeling

- Compilation and Analysis of Historical Climate and Measurement of Key Variables
- Intercomparison of Regional Climate Models
- Development of Climate Scenarios for California

Compilation and Analysis of Historical Climate and Measurement of Key Variables
Develop a comprehensive California-focused climate database, using existing data sources and adding key measurement sites as needed.

Intercomparison of Regional Climate Models
Develop a modeling protocol to validate and intercompare regional climate models (RCMs), which includes numerical and statistical models and other promising modeling approaches. Once developed, compare models against each other and against observational data, at resolutions needed for climate change applications, to identify characteristic model errors.

Development of Climate Scenarios for California
Develop ensembles of regional climate change projections using best-performing RCMs from the previous project. This would allow researchers to assign probability to the different climate scenarios. Coordinate with impact and adaptation analyses projects to ensure that the climate modeling results provide adequate geographical and temporal resolutions for the parameters needed.

A Roadmap for PIER Research on Impacts of Climate Change on California Water Resources

- Monitoring of Hydrologically Important Variables
- Testing the Operation of the State Water System under Plausible Climate Scenarios

Monitoring of Hydrology Important Variables
Conduct regular, consistent and sustained measurements of hydrologically important variables such as precipitation, snowpack, and streamflow, to track changes in these variables and to verify model predictions.

Testing the Operation of the State Water System under Plausible Climate Scenarios
Study the state water system, with an emphasis on the operation of the Central Valley Project and the State Water Project, which together furnish about 30% of California net water demand for agricultural and urban uses.

A Roadmap for PIER Research on Impacts of Climate Change on Ecological Resources

- Enhancement and Application of Dynamic Vegetation Models (DVMs) for California

Enhancement and Application of Dynamic Vegetation Models (DVMs) for California
Building on previous PIER-funded DVM work, explore ecosystem responses to multiple global changes and identify trends that would affect California ecosystems through the use of DVMs that incorporate new important features and make use of unexploited or new field data.

A Roadmap for PIER Research on Carbon Sequestration in Terrestrial Ecosystems and Geological Formations

- Development of Cost Estimates for Forestry and Agricultural Soil Carbon Sequestration Options in California
- Economic Studies of Bioenergy Strategies in California
- Carbon Sequestration in Geological Formations

Development of Cost Estimates for Forestry and Agricultural Soil Carbon Sequestration Options in California
Estimate of the potential for carbon sequestration in soil in California to enhance ongoing PIEREA/California Departments of Forestry and Food and Agriculture work.

Economic Studies of Bioenergy Strategies in California
Conduct analytical studies to identify obstacles in the deployment of bioenergy technologies, and improve understanding of the private and social costs associated with the use of bioenergy projects as a GHG emissions-reduction tool.

Carbon Sequestration in Geological Formations
Address the major technical issues associated with geologic storage in California. Research topics include: (1) monitoring and verification; (2) risk assessment, human health and environmental impact; (3) tectonic stability; (4) economic analysis/viability of technologies; (5) leakage assessment and petroleum reservoir analogues; (6) performance assessment; and (7) evaluation of novel technologies.

A Roadmap for PIER Research on Greenhouse Gas (GHG) Reduction Curves and Inventory Methods

- Energy Balances for California
- Research on New, Improved Methods to Estimate Non-CO_2 Emissions
- Development of Supply Curves for California

Energy Balances for California
Refinement of currently available energy balances for California, which are used to estimate multiple emissions from a variety of sources by ensuring all pertinent fuel information is included, to achieve an appropriate level of disaggregation for state-level analysis, and to correct certain inaccuracies and inconsistencies.

Research on New, Improved Methods to Estimate Non-CO_2 Emissions
Field measurement studies, model development and validation work to reduce the level of uncertainty in the estimation of non-CO_2 emissions.

Development of Supply Curves for California
Study and implement a number of methodological and macroeconomic integration issues. Develop methods to extrapolate short-term supply curves to much longer time horizons that account for potential technology changes.

A Roadmap for PIER Research on the Economics of Climate Change Mitigation and Adaptation in California

- Integrated Modeling and Impact Analysis
- Energy Efficiency and Technological Change
- Non-CO_2 GHGs and Markets for Emissions Trading

Integrated Modeling and Impact Analysis
Modify and significantly enhance a computable general equilibrium (CGE) model of California, in order to estimate the potential impacts of climate change and GHG mitigation policies on the state economy. Fund impact analyses.

Energy Efficiency and Technological Change
Improve policy-relevant methodologies for estimating carbon abatement costs, which provide California's policy-makers with improved tools for implementing carbon mitigation policies.

Non-CO_2 GHGs and Markets for Emissions Trading

Support research to develop a multi-GHG approach that fully exploits potential synergies and reaps ancillary benefits. Improve the methodology for constructing marginal cost or supply curves for non-CO_2 greenhouse gases, in order to develop a theoretical model that allows for empirically verifiable negative cost abatement and cost-reducing technological change.

Appendix 4. Sample Non-Disclosure Form

It is the responsibility of the Exploratory Grant Program Administrator to safeguard all confidential/ proprietary information contained in documents submitted to the Exploratory Grant Program. To fulfill this responsibility, the Program Administrator requires all personnel who process, screen, and review Exploratory Grant Program documents (pre-proposals, proposals, final reports) that contain confidential information, to complete a non-disclosure agreement with the Program Administrator.

By signing this agreement the Program Administrator (hereafter referred to as the PA) and the program support personnel granted access (hereafter referred to as the RECIPIENT) agree to abide by the following terms and conditions.

1. PA's Obligation: The PA agrees to clearly identify those documents containing confidential/proprietary information and to identify those sections within the documents that are considered confidential/proprietary by the grant applicant which may include any or all of the following: data, materials, designs, concepts, processes, samples, specifications and financial or business information.

2. RECIPIENT' Obligations: RECIPIENT agrees to take all such precautions as may be reasonably necessary to prevent the disclosure of all confidential/proprietary information contained in Exploratory Grant Program documents. In addition, the RECIPIENT agrees to the following:
   (a) Shall not make or retain copies of confidential information contained in Exploratory Grant Program documents (excluding the Exploratory Grant Program Administrator).
   (b) Shall not disclose confidential information to any third party unless the disclosure is necessary in the performance of their Exploratory Grant Program responsibilities, in which case, the new RECIPIENT granted access must also sign a non-disclosure agreement.
   (c) Shall not use the confidential information for personal benefit.

3. Limitation on Obligations: The obligations specified in section 2 above do not apply to information that meets the following conditions:
   (a) Information already known or independently developed by the RECIPIENT (in documented form) prior to this disclosure by the PA.
   (b) Information previously published or in the public domain.
   (c) Information that becomes public knowledge or is legally disclosed by third parties after this agreement is executed.

4. The term of this agreement shall be five (5) years from the date of access to any Exploratory Grant Program document containing confidential/proprietary information.

5. This agreement shall be governed and construed in accordance with the laws of the State of California.

AGREED AND ACCEPTED BY

RECIPIENT	**EXPLORATORY GRANT PROGRAM ADMINISTRATOR**
Signature & Date:	*Signature& Date:*
Printed Name:	*Printed Name*:
Address:	*Address*:
Document Covered By This Agreement	

SAMPLE FOR EXPLORATORY GRANT PROGRAM

SUBCONRACT NO. INPUT

between

UNIVERSITY OF CALIFORNIA, OFFICE OF THE PRESIDENT
CALIFORNIA INSTITUTE FOR ENERGY EFFICIENCY ("OP/CIEE")

and

INPUT ("Subcontractor")

This subcontract is between the Regents of the University of California, Office of the President on behalf of the California Institute of Energy Efficiency ('OP / CIEE") and INPUT ("Subcontractor").

Whereas, OP / CIEE has entered into a contract with the State Energy Resources Conservation and Development Commission ("Commission"); and

Whereas, the Commission is responsible for implementing the Public Interest Energy Research (PIER) Program; and

Whereas, Subcontractor's proposal has been selected for conducting research or other activities contributing to the Commission's mission and to the purposes of the prime contract;

NOW THEREFORE, the parties mutually agree as follows:

1. SCOPE OF WORK

Subcontractor shall exercise its best efforts to carry out the program indicated in Exhibit A, which is incorporated herein and made part of this Award. The Scope of Work may be modified only by mutual written agreement. Significant changes to the Scope must be approved by OP / CIEE and the Commission by amendment.

2. PERIOD OF PERFORMANCE

The period of performance shall be from "INPUT" through "INPUT". These dates are subject to the Commission's continued support of OP / CIEE.

3. CONSIDERATION

The total amount of funds made available and reimbursable under this Award shall not exceed $INPUT in accordance with the approved budget in Exhibit B.

4. PAYMENTS

OP / CIEE shall provide monthly payments in arrears upon receipt of an itemized invoice for actual costs. The invoice format with required cost elements is contained in the Exhibit B Budget workbook. Invoices shall be sent to:

California Institute for Energy Efficiency
Brad Niess, Subcontract Specialist
1333 Broadway, Suite 240
Oakland, CA 94612-1918
Tel: 510.287.3332
Fax: 510.287.3328

OP / CIEE can only process a payment request if all required deliverables and reports have been submitted and are in accordance with the Standards of Performance requirement in Project Management, below. The final request for reimbursement must be received by OP / CIEE no later than 60 calendar days after the end of the performance period.

Allowable costs shall be determined in accordance with OMB Circular A-21, "Cost Principles Applicable to Grants, Contracts and Other Agreements with Institutions of Higher Education," incorporated by reference as part of this Award.

Items included in the Exhibit B budget are considered approved. Subcontractor may reallocate up to a cumulative amount of fifteen percent (15%) of the total amount of the Award or $5,000, which ever is greater. Written notification of any such changes must be provided in the current progress report. Proposed budget changes which exceed the cumulative total of more than 15% or $5,000 require the prior written approval of OP / CIEE.

Title to any equipment purchased with Award funds vests with the Regents of the University of California, and may be used in the project or program for which it was acquired as long as needed. When the equipment is no longer needed for the original project, Subcontractor shall contact OP / CIEE for disposition instructions. If no disposition instructions are provided within 120 days after completion of the subaward, the Subcontractor shall have no further obligation to OP / CIEE regarding such equipment.

Unless specifically approved by OP / CIEE, funds are not authorized for purchase of general-purpose software or equipment, including computers, typewriters, word processors, duplication devices, and telecommunication devices.

5. PROJECT MANAGEMENT

For Technical Management:

Subcontractor's Principal Investigator (PI) INPUT is responsible for Subcontractor's portion of the research and is considered Key Personnel. No substitution may be made of Subcontractor's PI without OP / CIEE's prior written approval.

OP / CIEE's Principal Investigator Carl Blumstein is responsible for the overall conduct of the project. OP / CIEE Project Manager Edward Vine is responsible for technical monitoring and guidance.

Subcontractor personnel and any Subawardees performing work under this Award shall be responsible for exercising the degree of skill and care required by customarily accepted good professional practices and procedures.

6. SUBAWARDEES

Except for Subawardees identified in the approved budget, Subcontractor shall not subcontract or assign any part of the Project Workplan without prior written approval by OP / CIEE. Subcontractor shall require its Subawardees to comply with the terms and conditions contained herein.

7. REPORT STANDARDS

The required project Deliverables and Reports are described in the attached Exhibit A – Scope of Work and Attachment A-1 Administration. All deliverables shall be sent to the CIEE Sr. Subcontract Analyst with a copy to OP / CIEE Project Manager Vine. The required content and format of Progress Reports is described in Attachment A-2. The Final Report requirements are attached as Attachment A-3.

8. CONFIDENTIALITY

No confidential deliverables are anticipated under this Award. All products including, but not limited to, progress reports, task products, and the final report shall not contain confidential information except when the Commission Contract Manager and OP / CIEE deem it necessary to include confidential information in a product. In such event, Subcontractor shall prepare the deliverable in two separate volumes: one for public distribution and one to be maintained in the Commission's confidential records.

9. INTELLECTUAL PROPERTY DEVELOPED PRIOR TO THIS AWARD

The Commission makes no claim to intellectual property that existed prior to this award and was developed without Commission funding. Each work statement shall identify any applicable pre-existing intellectual property.

10. INTELLECTUAL PROPERTY

A. Commission's Rights in Deliverables

Deliverables and reports specified for delivery to the Commission under this Award shall become the property of the Commission. The Commission may use, publish, and reproduce the deliverables and reports subject to the provisions of Subparagraph C.

B. Rights in Technical, Generated, and Deliverable Data

1) Subcontractor's Rights

Data (technical, generated and deliverable) produced under this Award shall be the property of Subcontractor, limited by the license retained by the Commission in (2) below, and the rights the Commission has in deliverables specified above in A.

2) Commission's Rights

Subcontractor shall provide the Commission Contract Manager with a copy of all technical, generated and deliverable data produced under the Award, when requested.

Subcontractor is not required to copy and submit data that the Commission Contract Manager has identified as being unusable to the Commission and the PIER program. As an example, some data may not warrant routine copying and shipping because this raw data is too disaggregated or voluminous for practical application. Retention of such data at Subcontractor's facility for inspection, review and possible copying by the Commission Contract Manager is appropriate. However, upon request by the Commission, Subcontractor shall provide the Commission access to review technical and generated data produced in the course of this Award that is not requested to be delivered.

For all data (technical, generated and deliverable) produced under this Award, the Commission retains a no-cost, non-exclusive, non-transferable, irrevocable, royalty-free, worldwide, perpetual license to use, publish, translate, produce and to authorize others to produce, translate, publish and use the data, subject to the provisions of Subparagraph C.

C. Limitations on Commission Disclosure of Subcontractor's Confidential Information

1) Data provided to the Commission by Subcontractor, which data the Commission has not already designated as confidential and which Subcontractor seeks to have designated as confidential, or is the subject of a pending application of confidentiality, shall not be disclosed by the Commission except as provided in Title 20 CCR Sections 2505 and

following (and amendments), unless disclosure is ordered by a Court of competent jurisdiction.

2) It is the Commission's intent to use and release project results such as deliverables and data in a manner calculated to further PIER while protecting proprietary or patentable interests of the parties. Therefore, the Commission agrees not to disclose confidential data or the contents of reports containing data considered by Subcontractor as confidential, without first providing a copy of the disclosure document for review and comment by Subcontractor. Subcontractor shall have no less than 10 working days for review and comment and, if appropriate, to make an application for confidential designation pursuant to Title 20 CCR Sections 2505 and following (and amendments) on some or all of the data. The Commission shall consider the comments of Subcontractor and use professional judgment in revising the report, information or data accordingly.

D. Exclusive Remedy

In the event the Commission intends to publish or has disclosed data that Subcontractor considers confidential, Subcontractor' exclusive remedy is a civil court action for injunctive relief. Such court action shall be filed in Sacramento County, Sacramento, California.

E. Waiver of Consequential Damages

In no event will the Energy Commission be liable for any special, incidental, or consequential damages based on breach of warranty, breach of contract, negligence, strict tort, or any other legal theory for the disclosure of confidential information or information that Subcontractor considers confidential, even if the Commission has been advised of the possibility of such damage.

Damages that the Commission will not be responsible for include, but are not limited to, loss of profit; loss of savings or revenue; loss of goodwill; loss of use of the product or any associated equipment; cost of capital; cost of any substitute equipment, facilities, or services; downtime; the claims of third parties including customers; and injury to property.

F. Limitations on Subcontractor Disclosure of Award Data, Information, Reports and Records

1) Subcontractor will not disclose the contents of the final or any preliminary deliverable or report without first providing a copy of the disclosure document for review and comment to the Commission Contract Manager. Subcontractor shall consider the comments of the Commission Contract Manager and use professional judgment in revising the reports, information or data accordingly.

2) After any document submitted has become a part of the public records of the State, Subcontractor may, if it wishes to do so at its own expense, publish or utilize the same, but shall include the legal notice and copyright information as applicable.

3) Notwithstanding the foregoing, in the event any public statement is made by the Commission as to the role of Subcontractor or the content of any preliminary or Final Report of Subcontractor hereunder, Subcontractor may, if it believes such statement to be incorrect, state publicly what it believes is correct.

4) No record that is provided by the Commission to Subcontractor for Subcontractor's use in executing this Award and which has been designated as confidential, or is the subject of a pending Application for Confidential Designation, except as provided in Title 20, California Code of Regulations (CCR), section 2505 and following (and amendments), shall be disclosed, unless disclosure is ordered by a court of competent jurisdiction. At the election of the Commission Contract Manager, Subcontractor, Subcontractor' employees and any subcontractor shall execute a "Confidentiality Agreement," supplied by the Commission Contract Manager.

5) Subcontractor acknowledges that each of its officers, employees, and subcontractors who are involved in the performance of this Award will be informed about the restrictions contained herein and to abide by the above terms.

G. Proprietary Data

Proprietary data owned by Subcontractor shall remain with Subcontractor throughout the term of this Award and thereafter. The extent of Commission's access to the same and the testimony available regarding the same shall be limited to that reasonably necessary to demonstrate, in a scientific manner to the satisfaction of scientific persons, the validity of any premise, postulate or conclusion referred to or expressed in any deliverable hereunder.

H. Preservation of Data

Any data which is reserved to Subcontractor by the express terms hereof, and pre-existing proprietary or confidential data which has been utilized to support any premise, postulate or conclusion referred to or expressed in any deliverable hereunder, shall be preserved by Subcontractor at Subcontractor's own expense for a period of not less than three (3) years after final payment, unless a longer period of record retention is stipulated.

I. Destruction of Data

Before the expiration of three (3) years and before changing the form of or destroying any data, including technical, generated, deliverable proprietary data or trade secrets, Subcontractor shall notify Commission of any such contemplated action and Commission may, within thirty (30) days after said notification, determine whether it desires said data to be further preserved. If Commission so elects, the expense of further preserving said data shall be paid for by the Commission. Subcontractor agrees that Commission may at its own expense, have reasonable access to said data throughout the time during which said data is preserved. Subcontractor agrees to use its best efforts to identify competent witnesses to testify in any court of law regarding said data or, at Commission's expense, to furnish such competent witnesses.

J. Patent Rights

1) Patent rights for any Subject Invention, whether actually patented or unpatented, will be the property of Subcontractor whose employees or researchers are inventors of such invention pursuant to U.S. patent law, subject to the Commission obtaining a no-cost, nonexclusive, nontransferable, irrevocable, perpetual, royalty-free, worldwide license to use or have practiced such rights for or on behalf of the State of California for governmental purposes. Commission shall not purposefully enter into competition with a Licensee or take affirmative actions intended to effectively destroy the commercial market where a Licensee has introduced a Licensed Product. Subcontractor must obtain agreements to effectuate this clause with all persons or entities, except for the U.S. Department of Energy (DOE; as other rights apply), obtaining ownership interest in such patent rights. Previously documented (whether patented or unpatented under the patent laws of the United States of America or any foreign country) inventions are exempt from this provision.

2) Subcontractor will disclose to OP/CIEE on a confidential basis all Subject Inventions. Subcontractor shall send, by March 1 of each year, a report to OP/CIEE that provides non-proprietary information on the status of any patents and/or licensing agreements executed or under negotiation for Subject Inventions and/or activities by Licensee related to the development and testing of Licensed Product. OP/CIEE will forward this report to the Commission. The Commission may provide any suggestions to Subcontractor concerning commercialization strategies and/or potential licensees for such invention within sixty (60) days of receiving the disclosure from Subcontractor.

3) March-in Rights. With respect to any Subject Invention in which Subcontractor has acquired title, to the extent permissible under Federal laws and regulations, the Commission shall have the right to

require Subcontractor, an assignee or Licensee of such patent rights to grant a nonexclusive, partially exclusive, or exclusive license in any field of use to a responsible applicant, upon terms that are reasonable under the circumstances, and if Subcontractor, assignee, or Licensee refuses such request, to grant such a license itself, if the Commission determines that:

a) such action is necessary because Subcontractor, Licensee, or assignee has not taken, or is not expected to take within a reasonable time, effective steps to achieve practical application of the patent rights in such field of use; or

b) such action is necessary to alleviate health or safety needs that are not reasonably satisfied by Subcontractor, assignees, or their Licensees.

Final resolution, if not resolved under the DISPUTES paragraph, will be settled in the courts of the State of California. The parties may refer to the Federal Government's procedures for handling march-in rights.

4) Future Reductions. Subcontractor will submit to OP/CIEE in confidence within ninety (90) days after termination or expiration of this Award, a report listing inventions that are conceived, but not actually reduced to practice, in the performance of this Award. The Commission will identify in writing within sixty (60) days to Subcontractor those conceptions that it desires to reserve rights to should Subcontractor desire to actually reduce to practice those identified conceptions within forty-two (42) months after the termination or expiration of the Award. Subcontractor has an affirmative duty to report to OP/CIEE those conceptions reduced to practice within the forty-two (42) month period.

K. Commission's Rights to Invention

Subcontractor and all persons and/or entities obtaining an ownership interest in Subject Invention(s) shall include within the specification of any United States patent application, and any patent issuing thereon covering a Subject Invention, the following statement:

> "This invention was made with State of California support under California Energy Commission contract number 500-02-004. The Energy Commission has certain rights to this invention."

L. Commission's Interest in Inventions

Upon the perfecting of a patent application on any Subject Invention, Subcontractor will fill out and sign a Uniform Commercial Code (UCC.1)

Financing Statement and submit it the Commission Contract Officer for complete processing. The Commission Contract Officer will review the UCC.1 for complete information and file the completed UCC.1 with the Secretary of State's Office.

M. Copyrights

1) Copyrightable work first produced under this Award shall be owned by Subcontractor, limited by the license granted to the Commission in 2) below.

2) Subcontractor agrees to grant the Commission a royalty-free, no-cost nonexclusive, irrevocable, nontransferable worldwide, perpetual license to produce, translate, publish, use and dispose of, and to authorize others to produce, translate, publish, use and dispose of all copyrightable work first produced or composed in the performance of this Award.

3) Subcontractor will apply copyright notices to all Deliverables using the following form or such other form as may be reasonably specified by Commission:

> ©[Year of first publication of deliverable], [copyright holder]. All Rights Reserved.

4) Software

In the event software that is not a deliverable is developed under the Award, Subcontractor shall have the right to copyright and/or patent such software and grants the Commission a royalty-free, no-cost, non-exclusive, irrevocable, non-transferable, world-wide, perpetual license to produce and use for governmental purposes the software, and its derivatives and upgrades that may be developed by the authors within 42 months following the termination or expiration of this Award. The Commission shall not purposefully enter into competition with a Licensee or take affirmative actions intended to effectively destroy the commercial market where a Licensee has introduced a licensed product.

N. Intellectual Property Indemnity

Subcontractor will defend and indemnify Commission from and against any claim, lawsuit or other proceeding, loss, cost, liability or expense (including court costs and reasonable fees of attorneys and other professionals) to the extent arising out of any third party claim solely arising out of the negligent or other tortious act(s) or omission(s) by Subcontractor, its employees, or agents, in connection with intellectual property claims against either deliverables or Subcontractor' performance thereof under this Award.

11. TERMINATION

A. Default

In the event of any default , the Commission may, without prejudice to any of its other legal remedies, terminate the prime contract upon five (5) days' written notice to OP / CIEE. OP / CIEE shall immediately notify Subcontractor.

B. For Cause

The Commission may, for cause, and at its option, terminate the prime contract upon giving thirty (30)-days' advance written notice to OP / CIEE. OP / CIEE shall immediately notify Subcontractor. In such event, Subcontractor agrees to use all reasonable efforts to mitigate its expenses and obligations.
The term "for cause" includes, but is not limited to, the following reasons:

- Loss of State or Federal funding for this Award;
- significant change in State or Commission policy such that the work or product being funded would not be supported by the Commission;
- change in Commission's staffing such that the work or product being funded can be done by staff of the Commission.

C. Allowable Termination Costs

OMB Circular A-21, Section J.49, shall be used to determine allowable termination costs, but not in excess of the total amount of this Award.

12. STOP WORK

The Commission Contract Manager may, at any time, by written notice to the OP / CIEE require Subcontractor to stop or suspend work on all or any part of the Award work tasks. OP / CIEE shall immediately notify Subcontractor.

A. Compliance

Upon receipt of such Stop Work order, Subcontractor shall immediately take all necessary steps to comply therewith and to minimize the incurrence of costs allocable to work stopped.

B. Equitable Adjustment

An equitable adjustment shall be made by the Commission based upon a written request by Subcontractor for an equitable adjustment. Subcontractor must make such adjustment request within thirty (30) days from the date of receipt of the Stop Work notice.

13. DISPUTES

In the event of a contract dispute or grievance between the Commission Contract Manager and Subcontractor, the following procedure shall be followed by both parties:

A. Commission Dispute Resolution

If a problem cannot be resolved within ten (10) working days between the Commission Contract Manager and the UC Contract Manager, Subcontractor shall prepare a package in writing stating the issues in the dispute, the legal authority or other basis for Subcontractor' position and the remedy sought. The package must be submitted to the Commission Dispute Resolution Committee. The Committee shall make a determination on the problem within ten (10) working days after receipt of the package. Should Subcontractor disagree with the Committee's decision, Subcontractor may appeal to the full Commission at a regularly scheduled business meeting. The Committee will provide OP/CIEE and Subcontractor with the current procedures for placing the appeal on a Commission Business Meeting Agenda.

Subcontractor shall continue with the responsibilities under this Award during any dispute.

B. Binding Arbitration

Should the Commission's Dispute Resolution procedure identified in Subparagraph A above fail to resolve a contract dispute or grievance to the satisfaction of OP/CIEE and Subcontractor, OP/CIEE and Subcontractor may elect to have the dispute or grievance resolved through binding arbitration. The Commission may also elect to have any contract dispute or grievance resolved through binding arbitration. Both parties must agree to submit the dispute or grievance to arbitration. The arbitration proceeding shall take place in Sacramento County, California, and shall be governed by the commercial arbitration rules of the American Arbitration Association (AAA) in effect on the date the arbitration is initiated. The dispute or grievance shall be resolved by one (1) arbitrator who is an expert in the particular field of the dispute or grievance. The arbitrator shall be selected in accordance with the aforementioned commercial arbitration rules. The decision rendered by the arbitrator shall be final, and judgment may be entered upon it in accordance with the applicable law in any court having jurisdiction thereof. The demand for arbitration shall be made no later than six (6) months after the date of the contract's termination, irrespective of when the dispute or grievance arose, and irrespective of the applicable statute of limitations for a suit based on the dispute or grievance. If the parties do not mutually agree to arbitration, the parties agree that the forum to resolve a dispute is State court or Federal court, with the exception of Federal bankruptcy court.

The cost of arbitration shall be borne by the parties as follows:

1) The AAA's administrative fees shall be borne equally by the parties;
2) The expense of a stenographer shall be borne by the party requesting a stenographic record;
3) Witness expenses for either side shall be paid by the party producing the witness;
4) Each party shall bear the cost of its own travel expenses;
5) All other expenses shall be borne equally by the parties, unless the arbitrator apportions or assesses the expenses otherwise as part of his or her award.

At the option of the parties, any or all of these arbitration costs may be deducted from any balance of Award funds. Both parties must agree, in writing, to utilize Award funds to pay for arbitration costs.

C. Revoking a Stop Work Order

Subcontractor shall resume stopped work only upon receipt of written instructions from OP / CIEE canceling the Stop Work order.

14. AUDIT

The Subcontractor performing work under this Award agrees that the Commission, the California Department of General Services, the Bureau of State Audits, or their designated representative shall have the right to review and to copy any records and supporting documentation pertaining to the performance of this Award if it exceeds $10,000. Subcontractor agrees to maintain such records for possible audit for a minimum of three (3) years after final payment, unless a longer period of record retention is stipulated.

15. INDEMNIFICATION

Subcontractor shall defend, indemnify, and hold The Regents, its officers, employees, and agents harmless from and against any and all liability, loss, expense (including reasonable attorneys' fees), or claims for injury or damages arising out of the performance of this Subcontract but only in proportion to and to the extent such liability, loss, expense, attorneys' fees, or claims for injury or damages are caused by or result from the negligent or intentional acts or omissions of Subcontractor, its officers, agents, or employees.

The Regents shall defend, indemnify, and hold Subcontractor, its officers, employees, and agents harmless from and against any and all liability, loss, expense (including reasonable attorneys' fees), or claims for injury or damages arising out of the performance of this Subcontract but only in proportion to and to the extent such liability, loss, expense, attorneys' fees or claims for injury or damages are caused by

or result from the negligent or intentional acts or omissions of The Regents, its officers, agents or employees.

16. USE OF NAME

Use of the California Institute for Energy Efficiency (OP/CIEE) name in publications, news releases, advertising, speeches, technical papers, photographs and other releases of information regarding this undertaking or data developed hereunder may not be made except upon prior written approval from the OP/CIEE, or except for purposes of support acknowledgement. In any written release of information, Subcontractor shall use the Legal Notice given in Exhibit A-2, Final Report Instructions.

17. CHANGES AND AMENDMENTS

All requests for amendments or modifications must be submitted to the OP/CIEE Award Administrator for approval.

18. AUTHORIZED PERSONNEL

The following individual is authorized to negotiate, modify, terminate, and administer this Award:

OP/CIEE :
John L. Snyder, Sr. Subcontracts Analyst
University of California, Office of the President
California Institute for Energy Efficiency
1333 Broadway, Suite 240
Oakland, CA 94612-1918
E-mail: John.Snyder@ucop.edu
Phone: 510-287-3322
Fax: 510-287-3328

The following individual is authorized within the scope of work to provide technical direction or request supporting services for OP/CIEE:

OP/CIEE Contract Manager:
Carl Blumstein
University of California, Office of the President
California Institute for Energy Efficiency
1333 Broadway, Suite 240
Oakland, CA 94612-1918
Phone: 510-287-3320
Fax: 510-287-3328

APPROVALS:

FOR SUBCONTRACTOR

By:_____
Signature

_____
Typed Name

_____
Title

_____
Date Signed

FOR OP / CIEE

By:_____
Signature

_____
Typed Name

_____
Title

_____
Date Signed

EXHIBIT A
SAMPLE WORK STATEMENT
WORK AUTHORIZATION MR-00X

GLOSSARY
Specific terms and acronyms used throughout this work statement are defined as follows:

Acronym	*Definition*
	*(*Insert additional rows as needed.*)*

Problem Statement
Describe the problem that this research will address.

GOALS AND OBJECTIVES

The goal of this project is to…(*Complete the sentence with a brief description of the goal(s). Goals can be technical, economic or social. Please be brief, two to three sentences maximum*.)

This project meets the PIER Goal of <pick one from the list below> by <fill in the blank>. (If applicable, this project also meets the secondary goal of <pick one from the list below> by <fill in the blank>.)

PIER Goals
1. Improving the Energy Cost/Value of California's Electricity
2. Improving the Environmental and Public Health Costs/Risk of California's Electricity
3. Improving the Reliability/Quality of California's Electricity
4. Improving the Safety of California's Electricity

The objectives of this project are to…(*Complete this sentence with the objectives, which are things that will be measurable or knowable at the end of **this** project*.)

Examples of Performance Measures:
- . . .reduce the cost of electricity generation (or supply) by ____%.
- . . .increase the number of new technologies that are market-ready by ____<fill in the number>.
- . . . increase the adoption by the market of specific technologies by ___%.
- . . . increase the renewable technologies that are cost competitive by __%.
- . . . increase the new energy systems that can use multiple fuels by ____%.
- . . . decrease end-use consumption in specific energy sectors.
- . . . decrease the system impacts over current best practices by ____%.
- . . .increase the number of market-ready technologies that contribute to reduced risks of increased environmental/health impacts by ____<fill in the number>.

- . . .reduce the interruption frequency and duration per customer type per year by ____<fill in the number>.
- . . .increase the expected number of new technologies providing increased reliability/quality choices to consumers by ____<fill in the number>.
- . . .decrease the rates of injury and fatality associated with electricity generation/supply and usage by ____<fill in the number>.
- . . .determine the effectiveness of the XYZ process.

ADMINISTRATION

MEETINGS

Task 1.1 Attend Kick off Meeting
Task 1.2 Critical Project Review Meetings (Not Req'd for Exploratory Grants)
Task 1.3 Final Meeting
Task 1.4 Progress Reports
Task 1.5 Test Plans, Technical Reports and Interim Deliverables
Task 1.6 Final Report
Task 1.6.1 Final Report Outline
Task 1.6.2 Final Report

PERMITS AND ELECTRONIC FILE FORMAT

Task 1.7 Identify and Obtain Required Permits
Task 1.8 Electronic File Format

Refer to Attachment A-1 for the details of Administration

TASK 2.0 TECHNICAL TASKS

The project's work scope involves the following technical tasks:

Task 2.1 (*Insert Task Name*)
Task 2.2 – 2.n-2 (*Insert Task Name*)
Task 2.n-1 Technology Transfer Activities *(If applicable)*
Task 2.n Production Readiness Plan *(If applicable)*

Technical Task Descriptions
The work effort should be divided into a series of logical, discrete and sequential tasks. Technical tasks start with the number **2.1**. Please use the following pattern for each technical task.

Task 2.1 (*Insert Task Name*)
The goal of this task is to . . .(*Complete the sentence by inserting a **brief** description that identifies the expected result(s) and accomplishments for this task. The description should be 2 to 3 sentences maximum. Use a consistent naming convention throughout the work statement. For example, the name "photovoltaic system" is not the same as the name "solar electric generation alternative." Pick one name and stick with it throughout.)*

Successful completion of this task will be measured by…(*Complete the sentence by listing the performance measure(s) or other criteria that will be used to evaluate the results and to determine to what degree the goal was achieved.*)

Meeting this goal helps to achieve the project objectives by… *(Complete the sentence.)*

The Performing Institution shall:

- *(Insert verb in active tense) . . . (Complete the sentence.)*
- *(Insert verb in active tense) . . . (Complete the sentence.)*

(*List each individual **activity** with a separate bullet and begin each bullet with a verb to continue the sentence beginning with "The Performing Institution shall." Organize activities in the order in which they will occur. A bullet needs to appear before each activity. Use this section to describe the essential elements of **the process** you will use to complete the project..*

*The contents of each **deliverable** shall also be described in this section. Only the **names** of each deliverable shall appear in the "Deliverables" section. Use exactly the same name to identify a deliverable (report, data set, project plan, etc.) in the activity and in the list of deliverables. A bullet needs to appear before each deliverable.*

Deliverables are products that incorporate the knowledge and understanding gained by performing the activities and that are submitted to the Commission for review, comment and approval. Deliverables include, but are not limited to, written reports that describe methods, test plans, results of testing, analysis of data, conclusions, and recommendations for future study, workshop agendas and summaries, description and photographs of equipment/product developed, summaries of advisory group meetings, computer software with written instructions for data input and use of the software, if intended for public or Commission use, and production prototypes. The sum of the deliverables should be sufficiently detailed to be of use to stakeholders and other researchers. The level of detail should be sufficient for an observer to assess whether the project objectives and goals have been successfully met.

Deliverables:

- 1st deliverable (name only)
- 2nd deliverable (name only)

(*List deliverables using the same name and in the order that they appear in "The Performing Institution shall" section. Only the deliverable name should be listed here. The contents of each deliverable shall be described in "The Performing Institution shall" section.)*

Key Personnel:
<fill in the name(s)>
(Name of key person for this task that works for the Performing Institution. If none, state none.)

Key Subcontractors:
<fill in the name(s) and/or company(ies)>
(*Name of key company or name of key person at key company for this task. If none, state none.)*

Task 2.2 – 2.n-2
(Repeat the process as shown above)

Task 2.n-1 Technology Transfer Activities (Technology Transfer activities for the Exploratory Grant program will be in the form of Progress Reports and Final Report).

The goal of this task is to develop a plan to make the knowledge gained, experimental results and lessons learned available to decision-makers in industry and government.

If this task is applicable, the Performing Institution shall:

- Prepare a Technology Transfer Plan. The plan shall explain how the knowledge gained in this project will be made available to the public. The level of detail expected is least for research-related projects and highest for demonstration projects. Key elements from this report shall be included in the Final Report for this project.

- Submit the draft Technology Transfer Plan to the Commission Project Manager for review and comment. Once agreement on the draft plan has been reached, the final plan shall be submitted to the Commission Project Manager for written approval, which shall be provided within 5 working days of receipt.

- Conduct technology transfer activities in accordance with the Technology Transfer Plan. These activities shall be reported in the Monthly Progress Reports.

Deliverables:

- Draft Technology Transfer Plan
- Final Technology Transfer Plan

Key Personnel:
<fill in the name(s)>
(Name of key person for this task that works for the Performing Institution. If none, state none.)

Key Subcontractors:
<fill in the name(s) and/or company(ies)>
(*Name of key company or name of key person at key company for this task. If none, state none.)*

Task 2.n Production Readiness Plan *(If applicable)* (Not Req'd for Exploratory Grants)
The goal of the plan is to determine the steps that will lead to the mass manufacturing of the technologies developed in this project.

If this task is applicable, the Performing Institution shall:

- Prepare a Production Readiness Plan. The degree of detail in the Production Readiness Plan discussion should be proportional to the complexity of producing the proposed product and its state of development. The plan shall include as appropriate but not be limited to:
- Identification of critical production processes, equipment, facilities, personnel resources, and support systems that will be needed to produce a commercially viable product;
- Internal manufacturing facilities, as well as supplier technologies, capacity constraints imposed by the design under consideration, identification of design critical elements and the use of hazardous or non-recyclable materials. The product manufacturing effort may include "proof of production processes";
- A projected "should cost" for the product when in production;
- The expected investment threshold to launch the commercial product;
- An implementation plan to ramp up to full production.

- Submit the draft Production Readiness Plan to the Commission Project Manager for review and comment. Once agreement on the draft plan has been reached the final plan shall be submitted to the

Commission Project Manager for written approval, which shall be provided within 5 working days of receipt.

Deliverables:

- Draft Production Readiness Plan
- Final Production Readiness Plan

Key Personnel:

<fill in the name(s)>

(Name of key person for this task that works for the Performing Institution. If none, state none.)

Key Subcontractors:

<fill in the name(s) and/or company(ies)>

(*Name of key company or name of key person at key company for this task. If none, state none.)*

ADMINISTRATION

MEETINGS

Task 1.1 Attend Kick-off Meeting

The goal of this task is to establish the lines of communication and procedures for implementing this Agreement.

The Principal Investigator shall:

- Attend a "kick off" meeting with the Commission Project Manager. This meeting may be by phone or in person as appropriate and as time permits. When necessary, the Commission Project Manager may request others to participate in the meeting including the Commission Contract Manager, and a representative from the Performing Institution's Contracts and Grants Office. The technical and administrative aspects of this Agreement will be discussed at the meeting. Prior to the kick-off meeting, the Commission Project Manager will provide an agenda to all potential meeting participants.

  The administrative portion of the meeting shall include, but not be limited to, the following:
  - Roles and responsibilities of both parties
  - Budget changes
  - Invoicing
  - Prior approvals for travel and equipment
  - Confidential deliverables
  - Intellectual property
  - Critical Project Reviews (Task 1.2) (N/A for Exploratory Grants)
  - Permit documentation (Task 1.7)
  - Electronic File Format (Task 1.8)
  - Establish the PAC (Task 1.10) (optional) (N/A for Exploratory Grants)
  - PAC Meetings (Task 1.11) (optional) (N/A for Exploratory Grants)

  The technical portion of the meeting shall include, but not be limited to, the following:
  - The Commission Project Manager's expectations for accomplishing tasks described in the Scope of Work;
  - An updated Schedule of Deliverables
  - An updated Gantt chart if applicable
  - Progress Reports (Task 1.4)
  - Technical Deliverables (Task 1.5)
  - Final Report (Task 1.6)

The Commission Project Manager shall designate the date and location of this meeting.

Deliverables:

- An Updated Schedule of Deliverables

- An Updated Gantt Chart
- An Updated List of Permits
- Schedule for Recruiting PAC Members (optional)

Task 1.2 Critical Project Review Meetings
The goal of this task is to determine if the project should continue to receive Commission funding to complete this Agreement and if it should, are there any modifications that need to be made to the tasks, deliverables, schedule or budget.

Critical Project Reviews provide the opportunity for frank discussions between the Commission and the Performing Institution. CPRs generally take place at key, predetermined points in the Agreement, as determined by the Commission Project Manager and as shown in the Technical Task List above and in the Schedule of Deliverables. However, the Commission Project Manager may schedule additional Critical Project Reviews as necessary, and, if necessary, the budget will be reallocated to cover the additional costs borne by the Performing Institution.

Participants include the Commission Project Manager and the Performing Institution, and may include the Commission Contract Manager, the Commission Contract Officer, the PIER Program Team Lead, other Commission staff and Management as well as other individuals selected by the Commission Project Manager to provide support to the Commission.

The Commission Project Manager shall:

- Determine the location, date and time of each Critical Project Review meeting with the Performing Institution. These meetings generally take place at the Energy Commission, but they may take place at another location.

- Send the Performing Institution the agenda and a list of expected participants in advance of each Critical Project Review. If applicable, the agenda shall include a discussion on both match funding and permits.

- Conduct and make a record of each Critical Project Review meeting. One of the outcomes of this meeting will be a schedule for providing the written determination described below.

- Determine whether to continue the project, and if continuing, whether or not to modify the tasks, schedule, deliverables and budget for the remainder of the Agreement, including not proceeding with one or more tasks. If the Commission Project Manager concludes that the project needs a formal amendment or that satisfactory progress is not being made and the project needs to be ended, these conclusions will be referred to the Commission's Research, Development and Demonstration Policy Committee for its concurrence.

- Provide the Performing Institution with a written determination in accordance with the schedule. The written response may include a requirement for the Performing Institution to revise one or more deliverables that were included in the Critical Project Review.

The Performing Institution shall:

- Prepare a Critical Project Review Memorandum for each Critical Project Review that discusses the progress of the Agreement toward achieving its goals and objectives. This memorandum shall be submitted along with any other deliverables identified in this Scope of Work. Submit these documents to the Commission Project Manager and any other designated reviewers at least 10 working days in advance of each Critical Project Review meeting.

- Present the required information at each Critical Project Review meeting and participate in a discussion about the Agreement.

Performing Institution Deliverables:
- Critical Project Review Memorandum(Memoranda)
- Critical Project Review deliverables identified in this Scope of Work

Commission Project Manager Deliverables:
- Agenda and a List of Expected Participants
- Schedule for Written Determination
- Written Determination

Task 1.3 Final Meeting
The goal of this task is to close out this Agreement.

The Principal Investigator shall:

- Meet with the Commission to present the findings, conclusions, and recommendations. The final meeting must be completed during the closeout of this Agreement.

  This meeting will be attended by, at a minimum, the Performing Institution, the Commission Contracts Officer, and the Commission Project Manager. The technical and administrative aspects of Agreement closeout will be discussed at the meeting, which may be two separate meetings at the discretion of the Commission Project Manager.

  The technical portion of the meeting shall present findings, conclusions, and recommended next steps (if any) for the Agreement. The Commission Project Manager will determine the appropriate meeting participants.

  The administrative portion of the meeting shall be a discussion with the Commission Project Manager and the Contracts Officer about the following Agreement closeout items:

  - Commission's request for specific "generated" data (not already provided in Agreement deliverables)
  - Need to document Performing Institution's disclosure of "subject inventions" developed under the Agreement
  - "Surviving" Agreement provisions, such as repayment provisions and confidential deliverables.
  - Final invoicing and release of retention

· Prepare a schedule for completing the closeout activities for this Agreement.

Deliverables:
· Written documentation of meeting agreements and all pertinent information
· Schedule for completing closeout activities

REPORTING

Task 1.4 Progress Reports

The goal of this task is to periodically verify that satisfactory and continued progress is made towards achieving the research objectives of this Agreement.

The Performing Institution shall:

· Prepare progress reports which summarize all Agreement activities conducted by the Performing Institution for the reporting period, including an assessment of the ability to complete the Agreement within the current budget and any anticipated cost overruns. Each progress report is due to the Commission Project Manager within 5 working days after the end of the reporting period. Attachment A-1, Progress Report Format, provides the recommended specifications.

Deliverables:
· Quarterly Progress Reports

Task 1.5 Test Plans, Technical Reports and Interim Deliverables

The goal of this task is to set forth the general requirements for submitting test plans, technical reports and other interim deliverables. Unless described differently in the Technical Tasks,

The Performing Institution shall:

· Submit a draft of each deliverable listed in the Technical Tasks to the Commission Project Manager for review and comment in accordance with the approved Schedule of Deliverables. The Commission Project Manager will provide written comments back to the Performing Institution on the draft deliverable within 5 working days of receipt. Once agreement has been reached on the draft, the Performing Institution shall submit the final deliverable to the Commission Project Manager. The Commission Project Manager shall provide written approval of the final deliverable within 2 working days of receipt. Key elements from this deliverable shall be included in the Final Report for this project.

· Submit two copies of the final deliverable with the next invoice.

Task 1.6 Final Report

The goal of this task is to prepare a comprehensive written Final Report that describes the original purpose, approach, results and conclusions of the work done under this Agreement. The Commission Project Manager will review and approve the Final Report. The Final Report must

be completed on or before the termination date of the Agreement. Attachment A-2, Final Report Format, provides the recommended specifications.

The Final Report shall be a public document. If the Performing Institution has obtained confidential status from the Commission and will be preparing a confidential version of the Final Report as well, the Performing Institution shall perform the following subtasks for both the public and confidential versions of the Final report.

Task 1.6.1 Final Report Outline

The Performing Institution shall:

· Prepare a draft outline of the Final Report.

· Submit the draft outline of Final Report to the Commission Project Manager for review and approval. The Commission Project Manager will provide written comments back to the Performing Institution on the draft outline within 5 working days of receipt. Once agreement has been reached on the draft, the Performing Institution shall submit the final outline to the Commission Project Manager. The Commission Project Manager shall provide written approval of the final outline within 2 working days of receipt.

· Submit two copies of the final report outline with the next invoice.

Deliverables:
· Draft Outline of the Final Report
· Final Outline of the Final Report

Task 1.6.2 Final Report

The Performing Institution shall:

· Prepare the draft Final Report for this Agreement in accordance with the approved outline.

· Submit the draft Final Report to the Commission Project Manager for review and comment. The Commission Project Manager will provide written comments within 10 working days of receipt.

  Once agreement on the draft Final Report has been reached, the Commission Project Manager shall forward the electronic version of this report to the PIER Technology Transfer Group for final editing. Once final editing is completed, the Commission Project Manager shall provide written approval to the Performing Institution within 2 working days.

· Submit one bound copy of the Final Report with the final invoice.

Deliverables:
· Draft Final Report
· Final Report

PERMITS AND ELECTRONIC FILE FORMAT

Task 1.7 Identify and Obtain Required Permits

The goal of this task is to obtain all permits required for work completed under this Agreement in advance of the date they are needed to keep the Agreement schedule on track.

Permit costs and the expenses associated with obtaining permits are reimbursable under this Agreement. Permits must be identified in writing before the Performing Institution can incur any costs related to the use of the permit(s) for which the Performing Institution will request reimbursement.

The Performing Institution shall:

- Prepare a letter documenting the permits required to conduct this Agreement and submit it to the Commission Project Manager at least 2 working days prior to the kick-off meeting:

1. If there are no permits required at the start of this Agreement, then state such in the letter.

2. If it is known at the beginning of the Agreement that permits will be required during the course of the Agreement, provide in the letter:
    - A list of the permits that identifies the:
        - Type of permit
        - Name, address and telephone number of the permitting jurisdictions or lead agencies
    - Schedule the Performing Institution will follow in applying for and obtaining these permits

- The list of permits and the schedule for obtaining them will be discussed at the kick-off meeting, and a timetable for submitting the updated list, schedule and the copies of the permit(s) will be developed. The implications to the Agreement if the permits are not obtained in a timely fashion or are denied will also be discussed. If applicable, permits will be included as a line item in the progress reports and will be a topic at Critical Project Review meetings.

- If during the course of the Agreement additional permits become necessary, then provide the appropriate information on each permit and an updated schedule to the Commission Project Manager.

- As permits are obtained, send a copy of each approved permit to the Commission Project Manager.

- If during the course of the Agreement permits are not obtained on time or are denied, notify the Commission Project Manager within 5 working days. Either of these events may trigger an additional Critical Project Review.

Deliverables:

- A Letter Documenting the Permits
- Updated List of Permits as They Change During the Term of the Agreement

- Updated Schedule for Acquiring Permits as It Changes During the Term of the Agreement
- A Copy of Each Approved Permit

Task 1.8 Electronic File Format
The goal of this task is to unify the formats of electronic data and documents provided to the Commission as contract deliverables. Another goal is to establish the computer platforms, operating systems and software that will be required to review and approve all software deliverables.

The Performing Institution shall:

- Deliver documents to the Commission Project Manager in the following formats:
- Data sets shall be in Microsoft (MS) Access or MS Excel file format.
- PC-based text documents shall be in MS Word file format.
- Documents intended for public distribution shall be in PDF file format, with the native file format provided as well.
- Project management documents shall be in MS Project file format.
- Request exemptions to software standardization in writing at least 90 days before the deliverable is submitted.

Deliverables:
- A Letter Requesting Exemption from Software Standardization (if applicable)

PROJECT ADVISORY COMMITTEE (Optional)

Task 1.9 Establish the Project Advisory Committee
The goal of this task is to create an advisory committee for this Agreement.

The PAC should be composed of diverse professionals. The number can vary depending on potential interest and time availability. The Contractor's Project Director and the Commission Contract Manager shall act as co-chairs of the PAC. The exact composition of the PAC may change as the need warrants. PAC members serve at the discretion of the Commission Contract Manager.

The PAC may be composed of qualified professionals spanning the following types of disciplines:

- Researchers knowledgeable about the project subject matter
- Members of the trades who will apply the results of the project (e.g. designers, engineers, architects, contractors, and trade representatives)
- Public Interest Market Transformation Implementers
- Product Developers relevant to project subject matter
- DOE Research Manager
- Public Interest Environmental Groups
- Utility Representatives
- Members of the relevant technical society committees

The purpose of the PAC is to:

- Provide guidance in research direction. The guidance may include scope of research; research methodologies; timing; coordination with other research. The guidance may be based on:
    - technical area expertise
    - knowledge of market applications
    - linkages between the contract work and other past, present or future research (both public and private sector) they are aware of in a particular area
- Review deliverables. Provide specific suggestions and recommendations for needed adjustments, refinements, or enhancement of the deliverables.
- Evaluate tangible benefits to California of this research and provide recommendations, as needed, to enhance tangible benefits.
- Provide recommendations regarding information dissemination, market pathways or commercialization strategies relevant to the research products.

The Performing Institution shall:

- Prepare a draft list of potential PAC members that includes name, company, physical and electronic address, and phone number and submit it to the Commission Contract Manager at least 2 working days prior to the kick off meeting. This list will be discussed at the Kick-off Meeting and a schedule for recruiting members and holding the first PAC meeting will be developed.
- Recruit PAC members and ensure that each individual understands the member obligations described below, as well as the meeting schedule outlined in Task 1.11.
- Prepare the final list of PAC members.
- Submit letters of acceptance or other comparable documentation of commitment for each PAC member.

Deliverables:

- Draft List of PAC Members
- Final List of PAC Members
- Letters of Acceptance, or Other Comparable Documentation of Commitment for Each PAC Member

Task 1.10 Conduct Project Advisory Committee Meetings

The goal of this task is for the PAC to provide strategic guidance to this project by participating in regular meetings or teleconferences.

The Performing Institution shall:

- Discuss the PAC meeting schedule at the kick-off meeting. The number of face-to-face meetings and teleconferences and the location of PAC meetings shall be determined in consultation with the Commission Contract Manager. This draft schedule shall be presented to the PAC members during recruiting and finalized at the first PAC meeting.
- Organize and lead PAC meetings in accordance with the schedule. Changes to the schedule must be pre-approved in writing by the Commission Contract Manager.

- Prepare PAC meeting agenda(s) with back-up materials for agenda items.
- Prepare PAC meeting summaries, including recommended resolution of major PAC issues.

Deliverables:
- Draft PAC Meeting Schedule
- Final PAC Meeting Schedule
- PAC Meeting Agenda(s) with Back-up Materials for Agenda Items
- Written PAC Meeting Summaries, Including Recommended Resolution of Major PAC Issues

Attachment (A-2)

Content and Format of Progress Reports

PROGRESS REPORT for
Project Title,
500-02-004, WA# MR-00X
Date, 2003
Contractor Project Manager:
Commission Project Manager:

What we planned to accomplish this period
[This is taken directly from the section on "What we expect to accomplish during the next period" from the last progress report]

What we actually accomplished this period
[Concise description of major activities and accomplishments.]

How we are doing compared to our plan
[Explain the differences, if any, between the planned and the actual accomplishments. Describe what needs to be done, if anything, to get back on track.]

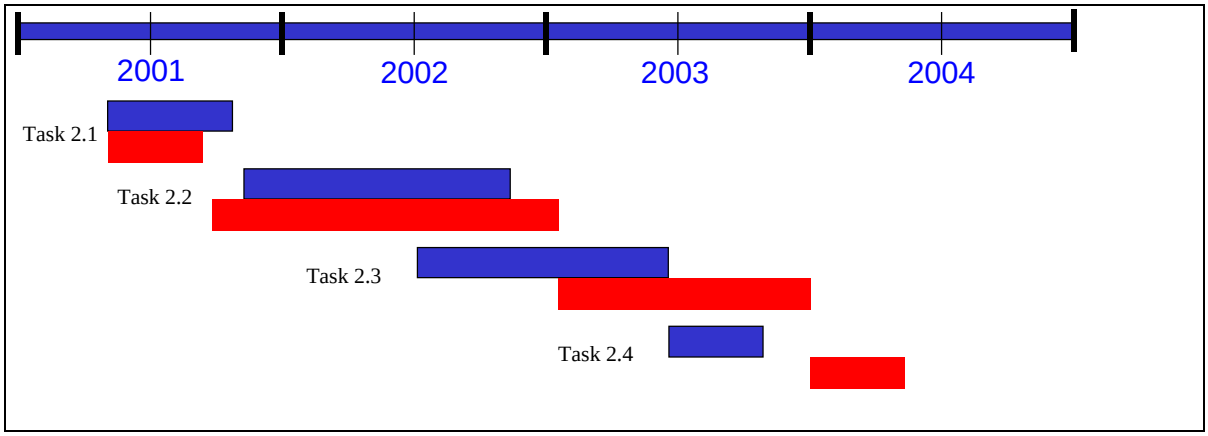
Significant problems or changes
[Describe any significant technical, regulatory or fiscal problems. Request approval for significant changes in work scope, revised milestone due dates, changes in key personnel assigned to the project, changes in match funds, changes to permits, or reallocation of budget cost categories. If none, include the following statement: "Progress and expenditures will result in project being completed on time and within budget."]

What we expect to accomplish during the next period
[Concise description of major activities and accomplishments expected, by task, deliverable or milestone as appropriate. This will be transferred to the next progress report]]

Status of Milestones and Deliverables:

[This should be the complete list as contained in the Scope of Work and the attached Schedule of Deliverables. Highlight differences between actual and planned.]

Description	Start Date		Due Date		Status (%)
	Planned	Actual	Planned	Actual	
Deliverable 1	DATE	DATE	DATE	DATE	Ontime 100%
Deliverable 2	DATE	**DATE**	DATE	**DATE**	**Ahead 100%**
Deliverable 3	DATE	**DATE**	DATE	**DATE**	**Delayed 25%**



Overall schedule for the _____ project.
[Planned is solid blue, actual is red striped. This work flow diagram needs to correlate with the schedule in Exhibit B. This example has been prepared as a Word Picture, but a comparable Excel diagram or Gantt chart is fine.]

Overview of Fiscal Status: (See invoices for detail.)
It is useful to track the rate of expenditure of project funds. The most useful way to do this is to compare the actual expenditure rate with the planned expenditure rate. You get the planned rate at the beginning of the project, so it becomes a baseline. If you change course at a critical project review, you should show the original and the modified baseline, and then track against the new one.

Photographs:
Include photographs where appropriate to document progress. The photos shall be shot with color print film or be very high quality digital photos (at least 300 dpi).]

Evidence of Progress:
If there is a long time between interim deliverables, then attach evidence of the progress being made (e.g., test data, product mock-ups, field site descriptions, preliminary analyses) to the Progress Reports to allow the Commission Contract Manager to review contract progress and gauge the quality of research results.

Notes:
The tracking for tasks and money is generally done at the major task level, but this depends on the project and fiscal controls.

Notice that there is no technical detail in these reports. This should come in specific deliverables so that critical project management information doesn't get lost. If the contractor is reporting monthly, but submitting invoices quarterly, then use the three monthly reports as an equivalent quarterly report. Don't make them write another report just to get paid.

The progress report on each project should be 1-2 pages long (plus photographs) and take about 1 hour to prepare for each reporting period.

Final Report Instructions

1. Please contact Susan Patterson (916) 654-4992, spatters@energy.state.ca.us of the PIER Technology Transfer Group before preparing the outline of your final report. She will explain the process and go over any questions you have. It is best if both the Contractor and the Commission Contract Manager participate in this discussion.

2. Please use the MS Office Suite for your final reports. The version currently in use at the Commission is "97" operating on Windows 98. Please let us know if significant portions of the report will be in other programs.

3. When the Contractor and the Commission Contract Manager have agreed to the Draft Final Report, the Commission Contract Manager forwards the electronic report file(s) to Susan Patterson.

4. Susan forwards these electronic report file(s)to Heather Roberts, the SAIC Editing Coordinator, and to Julie Talbert, who will log the report into the Technology Transfer Group's work order system (internal e-mail address: ***Tech Trans***) for tracking purposes.

5. Julie requests a publication number from Business Services and provides it to Susan and Heather

6. In about a week, Heather will schedule a teleconference with the Commission Contract Manager, the report's author, and Susan Patterson. The day before the teleconference, Heather will send all teleconference participants a PDF version of the report and a list of the sections to discuss and resolve in the teleconference (i.e., Executive Summary, Objectives, Outcomes, Conclusions, Benefits to California, Recommendations, Abstract).

7. During the teleconference, which is scheduled for two hours but usually takes less, the participants will walk through the Executive Summary to ensure that the goals, objectives, outcomes, conclusions and recommendations of the project are presented in a consistent and intelligible fashion. The Executive Summary is the primary focus of the teleconference. Editorial and format changes for the entire report will be discussed and agreed upon by all participants. We will also identify any missing elements and who is responsible for filling them. Before concluding the teleconference, the participants will develop a schedule for completing the edits to the report.

8. SAIC is responsible for collecting and incorporating all missing elements and comments into the Final Report. Typically this takes place during the week following the teleconference, but may take longer, depending on the schedule developed during the teleconference.

9. When the edits are complete, SAIC will notify all participants that the report is posted on **SAIC's PIER Website *http://pier.saic.com*** and is available for a final review by all.

10. If there are additional changes, those should be brought to Heather's attention directly with a "cc:" to all of the participants in the teleconference. Once the report is agreeable to all, the Commission Contract Manager will send written approval to the Contractor, who will submit 1 bound copy with their final invoice. At the same time, the Commission Contract Manager will notify Heather, who will send Susan 1 unbound master copy and forward the approved PDF to Bob Aldrich in the Commission's Media and Public Communications Office for posting on the Commission's PIER Website.

Final Report Contents

PIER Final Reports contain the following sections:

Cover Page and Title Page
Legal Notice
Acknowledgement Page
Table of Contents
Preface
Executive Summary
Abstract
Introduction
Project Approach
Project Outcomes
Conclusions and Recommendations
Endnotes
References
Glossary
Appendices
Attachments

Cover Page and Title Page

Please create one page with the following information. It will be used to create the cover and title pages.

- Title of the Report
- Name of primary author(s) or principal investigator
- Author's company, organization or affiliation
- Location of author's company, organization or affiliation (City, State)
- Name of Energy Commission Project Manager
- PIER Program Area
- PIER Program Area Lead
- Contract Number
- Amount of Contract (Total including amendments.)
- Publication Number (Ask Susan Patterson, (916) 654-4992 for this number.)
- Publication Date (Month and Year. Verify with Susan Patterson.)

Legal Notice

Use the following notice:

Legal Notice

This report was prepared as a result of work sponsored by the California Energy Commission (Commission, Energy Commission). It does not necessarily represent the views of the Commission, its employees, or the State of California. The Commission, the State of California, its employees, contractors, and subcontractors make no warranty, express or implied, and assume no legal liability for the information in this report; nor does any party represent that the use of this information will not infringe upon privately owned rights. This report has not been approved or disapproved by the Commission nor has the Commission passed upon the accuracy or adequacy of this information in this report.

NOTE: The abbreviation "CEC" is not allowed in final reports. Chose either Commission or Energy Commission throughout the report. Be consistent with one of the choices, and use it throughout the report.

Acknowledgement Page

This is the place for the author or principal investigator to acknowledge or express appreciation to those who participated in the project. This may be a paragraph, or a list of names, and if appropriate their affiliations.

Table of Contents

Sections to be included in the Table of Contents are as follows:

Preface

Executive Summary

Abstract

1. Introduction
   - Background and Overview (Why this project was necessary)
   - Project Objectives (What you planned to accomplish)
   - Report Organization

2. Project Approach (What you did to accomplish your objectives)

3. Project Outcomes (What happened)

4. Conclusions and Recommendations
   - Conclusions (What you learned from what happened)
   - Commercialization Potential
   - Recommendations (What you think should occur next)
   - Benefits to California

Endnotes

References

Glossary

List of Figures

List of Tables

Appendices

Attachments

Preface

Fill in the contract name, contract number, report title, organization, and research area, and numbers in the second to the last paragraph. Use the following Preface:

Preface

The Public Interest Energy Research (PIER) Program supports public interest energy research and development that will help improve the quality of life in California by bringing environmentally safe, affordable, and reliable energy services and products to the marketplace.

The PIER Program, managed by the California Energy Commission (Commission), annually awards up to $62 million to conduct the most promising public interest energy research by partnering with Research, Development, and Demonstration (RD&D) organizations, including individuals, businesses, utilities, and public or private research institutions.

PIER funding efforts are focused on the following six RD&D program areas:

- Buildings End-Use Energy Efficiency
- Industrial/Agricultural/Water End-Use Energy Efficiency
- Renewable Energy
- Environmentally-Preferred Advanced Generation
- Energy-Related Environmental Research
- Strategic Energy Research.

What follows is the final report for the **[Contract Name,] [Contract Number,]** conducted by the **[Company/Organization/Affiliation]**. The report is entitled **[Report Title]**. This project contributes to the **[PIER Program Area]** program.

For more information on the PIER Program, please visit the Commission's Web site at: http://www.energy.ca.gov/research/index.html or contact the Commission's Publications Unit at 916-654-5200.

Executive Summary

A final report in miniature, containing all key information. Summarizes the introduction, purpose, project objectives, project outcomes, conclusions, recommendations and Benefits to California. It is intended to be short, bullet formatting is suggested. Assume a non-technical, management-level readership. You may want to write this as if you will hand it out at a trade show. Emphasize the benefits of the project and include who should care and why. Put on the hat of an inquisitive, reasonably well-educated lay reader who may be interested in purchasing or implementing the subject technology. Pretend that they just paid for this research project and they want to understand how and why you spent their money.

If your project has more than one project, repeat this organization for each project area. The Executive Summary needs to summarize the report, not present new information found nowhere else in the document. Go the Commission web site for further examples.

Abstract

This section should be the technical counterpart to the executive summary. Less marketing and sales oriented than the Executive Summary. This should be similar to what you would find in a technical trade periodical. Limited to 250 words, essentially a very brief, Executive Summary. The Abstract covers the

purpose, objectives, outcomes and conclusions. Contains 5-10 keywords for computer searches. Geared toward a more technical audience.

Introduction

- Background and Overview (Why this project was necessary) - Provide relevant background, identify this project's subject area and the goals of this research. Use Stages and Gates terminology, where appropriate, to identify what stage the project has reached in its path to market. Refer to the contract for this information.
- Project Objectives (What you planned to accomplish) - Present the technical and economic objectives for your project. The objectives need to contain the way(s) to measure or know the success of having reached the objective. Use Stages and Gates terminology where appropriate. These should be taken from the contract and should reflect any changes made during critical project reviews or at other times during the course of the project. (Describe why these changes were made in the Project Approach section.)

  Each objective shall be separately identified, a useful form is:

  Project objectives were to:
  - Verify (an action verb followed by relevant text)….
  - Determine….
  - Measure…
  - Develop….
- Report Organization – Provides a roadmap to the rest of the report. If there are separate final reports for a multitasked project, set the context in Background section and refer the reader to their location here.

Project Approach

This section discusses the tasks you undertook and your approach to the research (What you did to accomplish your objectives). Discuss the testing procedures you undertook and the system modifications and improvements you made.

Project Outcomes

This is where you present your results (What happened). Organize this section so that results are presented in the same order as the objectives. A short version of each Outcome should be stated in bullet form. Supporting paragraphs that describe each Outcome should follow each bullet.

There can be more Outcomes than there were Objectives. For example, there may be more than one Outcome per Objective. It is also possible to have an unanticipated Outcome during your research. However, you can not have stranded objectives; all Objectives, whether met or not, must be discussed in this section. If this section is particularly long, then it is useful to create a summary at the end of this section where all of the bullets are drawn together as a summary.

Conclusions and Recommendations

- Conclusions (What you learned from what happened) - Organize the Conclusions in the same order as Objectives and Outcomes. You may have Conclusions that are broader than individual Objectives and Outcomes. Please present these after you present the individual Conclusions. Conclusions must be drawn from evidence presented in the report.

- Commercialization Potential - This is where you should directly address stages and gates. Explain where your project is in stages and gates. If your project had a task to prepare a Production Readiness Plan or a similar effort related to assessing where the research is in relationship to being used in its relevant markets (i.e. Stages and Gates), this is the place to discuss that task.

- Recommendations (What you think should occur next) - Recommendations should derive from the Conclusions presented. Recommendations specific to individual Objectives, Outcomes and Conclusions should be presented in the original order. General Recommendations should follow. Use Stages and Gates terminology where appropriate. What is the next stage for this project?

- Benefits to California - This section discussed two issues: (1) what benefits has California already received from this contract, if applicable, and (2) if this project is successful and the results widely used, how will California benefit. These benefits need to be related to the problems this research was intended to address. Refer to the Introduction section of the report.

Endnotes

Endnotes are preferred to footnotes.

Glossary

If there are more than 10 acronyms then a glossary with definitions for each acronym should be provided at the end of the report.

References

This is where you list all documents referred to in the body of the report. List references in standard bibliographic format. Be sure to check that shorthand references contained in the body of the report are accurate. Any documents referred to in the Appendices should be listed in the reference section in the appropriate Appendix.

Appendices

Designated by Roman numerals.

Attachments

If absolutely required, designated by Roman numerals.

Here is some additional guidance on how to ensure that the reports are technically accurate and internally consistent:

1. Put on the hat of an inquisitive, reasonably well-educated lay reader. Pretend that they just paid for this research project and they want to understand how and why you spent their money.
2. Apply the test of completeness. Are all the pieces there? Are all the references clear and do those in the text match those in the reference section? Are the relationships between the partners and the players clearly explained?
3. Apply the test of logic. Does the document flow and make sense? Is the need for the research clearly described? Is the technical approach clearly described? Do the conclusions make sense? Are they drawn from the analysis? Do the numbers check? Is it clear how the numbers were derived?
4. If the project didn't do everything it intended to do, explain.
5. The final report must primarily address the contract work statement. Doing this will help manage the scope and the effort required for this report. A) Some research projects are Stage X (e.g. one stage of stages and gates) of a longer-term program and all work done during the time the Commission was involved was funded by all of the partners. B) In other cases, the work being done in this Stage of the program had more tasks than the Commission participated in, although some of the results of this work may have impacted, or been impacted by the other tasks. The Commission funded portion of the research project (or program) needs to be clearly differentiated from the overall program of which this portion of the research is a part. Comments about the program should not be intermingled with those about the project.
6. The objectives of the research project need to be clearly stated. The objectives of the Commission funded research project need to be clearly differentiated from the objectives of the overall program of which the research is a part. The objectives of the program should not be intermingled with the objectives of the project. If some objectives of the program will be performed elsewhere, or at another time, this needs to be explained. The report should then stay focused on the objectives of this project.
7. There needs to be a clear relationship between the objectives and the outcomes. The outcomes of the Commission funded research project need to be clearly differentiated from the outcomes of the overall program of which the research is a part. The outcomes of the program should not be intermingled with the outcomes of the project.
8. The methods used to conduct the research need to be explained.
9. Data that is presented in the report needs to be analyzed. If you present a picture, graph or table, be sure that you discuss it in the text, not just refer to it.
10. Each conclusion needs to be substantiated by the analysis contained in the report.
11. Figures and Tables must clearly relate to, and be consistent with the text, and vice versa. (If the text says the generator had a capacity of 30 kW, the table shouldn't say it was 31.2 kW.)
12. Use consistent references to report performance specifications and results. For example, if a piece of equipment is to be referred to by its nominal nameplate rating then use that reference consistently throughout the report. If however the desired number was the measured performance of the device, (almost always different from nameplate) then consistently use that measured number. Do not mix the two in the narrative.
13. The text needs to clearly refer to the attached appendices. It should also explain how the data in the appendices matters to the text. If it doesn't really matter, it probably should be dropped. (You may still need it because it is a deliverable according to the contract, so check this carefully.) References to multi-page appendices need to be specific to the page or section of the appendix, not just a general reference to Appendix X.

PLEASE NOTE!

Sections 6 and 7 are not available in Acrobat PDF format. These parts are only available to download as Microsoft Excel files.

Please return to the main funding opportunities webpage and download the files labeled:

06_Explor_B-budg_Workbk.xls
07_Explor_sample_invoice.xls